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ORIGINAL ARTICLES.

PHYSIOLOGY THE BASIS OF CLINICAL MEDICINE. SUGGESTIONS AS TO COURSES IN APPLIED PHYSIOLOGY.

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THE experience of a quarter century in the practice of medicine, and particularly in the study of those subjects which commend themselves as of chief importance in accomplishing clinical results, has evolved in the writer the belief that certain changes could be advantageously made in the teaching of undergraduates.

A right comprehension and use of physiology is admitted by all to be not only of primary but of constant importance. The endeavor to revise and reform his own knowledge of the elemental principles of growth, development, functional activity and metabolism preparatory to understanding the phenomena of those departures from the normal which it is the prerogative of the physician to understand and control, has stimulated the writer to read extensively in works on modern physiology.

In common with many he has tried faithfully to keep before him the fundamental laws of life and growth, and use them in his daily work. The overwhelming tide of advancing medicine, however, demands such constant attention that to survey even the surface of knowledge is difficult; but to think deliberately and accurately requires oft-repeated careful revisions of fundamentals. Good counsel has directed his eye to note that a practical familiarity with physiologic laws is the basis of a clear understanding of medical problems. With this in view he has inquired among his most trusted colleagues and finds, to his amazement, how little they know or remember of physiology. They may be familiar with the most recent and acceptable views on pathologic anatomy or procedures, or current opinions on clinical phenomena, but few seem able to reason from fundamentals to legitimate conclusions. Each one appears ready to accept and trust the findings of others, wherever the science rings true, but few are critical of the physiologic reasoning employed.

Further research reveals the fact that among physiologists there is far too little accord on points vital to the clinician; insufficient attention being paid to many of the most practical problems. Physiology is becoming unwarrantably scholastic. The reason for this is the wide separation between the work of the physiologist and that of the clinician, which is a distinguishing feature of the period. No one deplores this more

frankly than the clinician and measures are demanded to mend matters in, for example, establishing courses of applied physiology in medical schools or their equivalent, special demonstrations of the physiology of organs or systems whose rearrangements are being taught in the regular courses on theory and practice of medicine.

Meanwhile few will deny the statement that if clinicians could be periodically supplied with a review of the principles of physiology, along with the principles of general pathology, they would first be surprised at their own previous ignorance, and secondly, would straightway become engines of immensely greater efficiency to combat disease. Life is too short, and the average human mind too limited to keep abreast of the advances in scientific thought unless supplied occasionally with a summary of tenable conclusions by master minds.

It is the conviction of the writer that there should be special teaching in applied physiology in addition to the systematic course. Unless the student is specifically instructed in applying the principles of life, growth, and functionation to the elucidation of the natural history and phenomena of change and disease, it is impossible for him to grasp the principles of general pathology or to form sound concepts or therapeutic measures.

The average human minds, even the best of them, require demonstrations of the relationship of laws to facts. Therefore it would seem that teachers of physiology might with advantage become members of the regular medical staff and thus possess opportunities for actual practice in hospital wards.

Few men of middle age, engaged in the great struggle of succoring life from devitalizing influences so swift and menacing on all sides, would fail to admit the urgent need of a clearer understanding of the institutes of medicine. This efficiency is not to be obtained from reading current literature on the advances in physiology, for by this we get only isolated facts or theories and at great labor, out of all proportion to the time and strength at our command. We must all rely on our early medical school teaching for the basis of our working knowledge and the rest is at best but a patchwork product. Perhaps most middle-aged practitioners will agree with our personal convictions that many subjects, or at least many presentations of the subjects taught and now being taught us, are practically useless. To specify which ones are effete would invite too wide a discussion. There can scarcely be dissent from the proposition that a man who has acquired a full, well rounded knowledge of physiology, if this be amplified by practical applications to general pathology, is thereby better equipped for re-

search, or to practice, diagnose, prognosticate or treat disease.

How many men emerge from our schools of whom this qualification can be claimed? Sixteen years as professor in the Polyclinic College for Graduates revealed to this observer amazingly few. Through working some years with Professor Reichert in the physiological laboratory of the University of Pennsylvania, he achieved at least a taste for this study, perhaps only enough to realize the unparalleled beauty and importance of the subject. To practice for a livelihood almost forbids laboratory research.

Is the teaching in our medical schools such that all who graduate have secured opportunities to learn the most important principles by which clear reasoning can be consistently achieved? If not, and no one can claim that perfection is attainable, wherein is the chief deficiency?

The proposition is respectfully submitted that the defect lies chiefly somewhere in the present methods of teaching physiology. Something must be amiss; not perhaps in the amount or quality of the science taught, but in the character, choice or form of the facts presented. There certainly is a conspicuous absence of wisely developed methods of demonstrating and teaching the application of physiologic facts to the processes of disease.

It is agreed among teachers that the whole subject should be presented during the undergraduate years. It would seem better if an outline knowledge, an intelligent grasp of the subject were demanded at the entrance examinations, and, then the departmental professor should elaborate chiefly those aspects of the subject which have points of closest contact with clinical medicine.

Again, no matter how fully a student may have absorbed book physiology, in due rotation of subjects as customarily presented, he will be the better for a recasting and grouping of broad principles to enable him to recognize the applicability of the science when sketched out upon different clinical backgrounds. It does seem to the writer desirable that few or no theories, conjectures, hypotheses should be presented to the undergraduate. Undoubtedly many statements must be made sub-junctively; many opinions are still *sub judice*. Dogmatism may readily become crystallized into misstatements, as would seem to have occurred in some worthy compends and later text-books. Caution in statement is desirable, especially on debatable grounds and where it is an essential part of some larger aggregation of facts.

A scientific use of the imagination, as Huxley has taught us, is an essential bridge to discovery, to progress, which, coupled with enthusiasm, is characteristic of the pioneer. Independence of thought should be encouraged in all branches. There is, however, an ample store of well-tried facts which may be safely accepted; of principles of action wherewith to reason. These are the materials of which the didactic teaching in physiology should chiefly consist. Beyond these are manifold analogies, pictures, resemblances, need-

ful to round out our conceptions, as Coleridge says, "the shaping spirit of imagination." Then comes the laboratory work, demonstrations, etc.; these if performed on the animal are essential as exemplars, but, as Dr. Chapman says, not comparable in value to human physiology for use among humans. There is a large field for demonstrations and experiments on the student harmless, yet illuminating.

The author is emboldened to make these statements first by frank conversations with Prof. Edward T. Reichert, Prof. Henry C. Chapman, and Prof. A. P. Brubaker, whom he has had the privilege of knowing for over twenty-five years, and secondly, by correspondence with a number of teachers of physiology in our leading medical schools.

The suggestion offered is that to supplement the course in pure physiology there should be demonstrations in applied physiology. These would naturally follow, or parallel, the subjects treated by the professors of pathology and practice, and this could best be done by men who are of recognized clinical abilities and experience and especially trained in the clinical applications of physiology. This teaching could even advantageously supplant some part of the courses now given.

In therapeutics and pathology as ordinarily taught a demonstrator, equipped as described, could be profitably added to make clear much that is now obscure and therefore unfit, being faultily stated, to carry conviction to student minds.

When we reflect that some of the professors of physiology are biologists, not medical graduates; that some, perhaps most, of those who are, or were, clinicians have long abandoned interest in clinical medicine, that the scholastic aims of some are too much toward the heights of pure science, that, moreover, the subject of pure physiology is so large and elaborate that it is practically impossible for any one man to keep himself thoroughly abreast of the progress in medicine, it is plain that if our students are to acquire a competent knowledge of this vital subject, they must do so by some such means as I have here suggested.

Appended are letters, or quotations from letters, pertinent to the subject under discussion. These are offered without special comment; they speak for themselves:

EDWARD T. REICHERT, University of Pennsylvania.—The subject of physiology has become so voluminous, is growing so rapidly in extent and importance, that the day cannot be far distant when it must be recognized as preeminently the most important of the fundamental branches in medicine. The idea of teaching the medical student so important a subject, and failing to have this teaching thoroughly applied at the bedside, strikes thoughtful ones with amazement, yet this is the condition existing at the present time—has always existed. It is true that the physiologist can, and, as in our present elaborate course in the University of Pennsylvania, does make ap-

plications here and there that will be understood by the student, but it is manifestly futile to attempt in any broad and satisfactory way to apply physiological facts, principles and theories to clinical conditions about which the student is not expected to know anything until a year or two after he has passed fundamentals. That physiology is not applied to any extent to clinical conditions is no fault of the physiologist, nor can the defect be remedied by any change in the present methods of teaching physiology as a fundamental subject. Physiology was never taught so broadly and so efficiently as at present. The eliminations of demonstration from the lecture course has made it possible to devote more time to didactic teaching, a great advantage on the whole, while the division of classes into sections for demonstrative instruction has greatly increased the value of practical teaching. Moreover, the many hours now allotted to practical exercises by the student have proven most valuable in fixing important facts and broadening their application, in developing acuteness of observation; in training in the use of instruments of precision, etc. The total number of hours assigned to each student in physiology at present is from three to four-fold greater than a decade ago.

In order to teach applied physiology, are we to make a clinician of the physiologist and extend his sphere so as to give instruction at the bedside, or is the clinical teacher to utilize and amplify his physiological knowledge? The former is absolutely impracticable, for even were the physiologist given hospital facilities and a larger number of hours he could not possibly use them to advantage excepting at a serious sacrifice of his other work; and, moreover, such a plan would necessarily be doomed to failure from the start if for no other reason because of the student's entire lack of preparation for such advanced teaching.

There are needed, first, physiologic clinicians who shall give during the third and fourth years special courses, didactic and practical, in applied physiology; and, second, clinicians in general who will, whenever possible, apply physiology in the interpretation of their cases. The importance of such instruction being given by the clinician is accentuated by the fact that some of the professors of physiology, and many of the assistants in physiology in our medical schools, are not graduates of medicine, and that the recruits to the ranks of the physiologist are now almost exclusively from biological schools. This means, of course, unless conditions change, that even such limited applications of physiology to clinical conditions as are now made by the physiologist will doubtless be entirely omitted in many of our medical schools. I am convinced from personal experience and observation that the best interests of medical schools would be subserved if a rule were established requiring graduation in medicine as one of the qualifications for a teachership in physiology.

To teach physiology and not to have this knowledge applied by clinical instructors is about as useless as to sow seeds in the desert. It is my belief that the coming men in clinical medicine will be physiologic clinicians.

A. P. BRUBAKER, Jefferson Medical School.—If by applied physiology is meant the collation and presentation of those pathologic processes or conditions which increase, disarrange, or abolish the normal actions which are termed pathologic, and in addition an explanation of the manner of their production, then in my opinion, applied physiology should be taught to the medical student. It also seems desirable that there should be included under this heading an account of the seat and mode of action of the more important and generally used drugs, e.g., strychnine, atropine, digitalin, etc., which modify favorably or unfavorably the action of physiologic mechanisms. If physiology is not to be utilized as a means of interpreting the abnormal phenomena observed by the clinician as well as the physiologic and toxic action of drugs observed by the therapist, then it does not appear to have that fundamental value to the medical man which is usually assigned it. As to who is the better qualified to make this application and to point out the close relationship of physiology to pathology and therapeutics, this must be determined in individual instances by the character of the training which the teachers of physiology and clinical medicine have received.

In the medical school, where the object of the curriculum is the education of men for the successful practice of medicine, it might appear at first glance that this application should be made by the physiologist, and in a general way no doubt this is the case. The extent to which it is done, however, will depend on the inclination, the training, and knowledge of the individual teachers. But to do so adequately and effectively, and in a manner acceptable and satisfactory to the clinicians of each specialty, it would be necessary for him to have had not only a regular medical education but also a considerable practical acquaintance with the phenomena of disease, the attainment of which would necessitate long residence in hospital wards.

Assuming, however, that a physiologic teacher possessing these qualifications be found, would it be desirable to have him present in connection with an outline of the action of physiologic mechanisms, the various causes and their mode of action which impair them up to the time when they become pathologic, to students who have not yet received any instruction as to the causes or nature of diseases. In my opinion the time and energy which would be expended in this direction by the physiologist might be more profitably expended in other directions. Nevertheless, I believe that a medical education would be of much benefit to the physiologist if for no other reason than affording him the point of view of the medical man.

It seems to me that the chief duty of the physiologist in the medical school is to impart to the student information regarding the functions of the human body, and to help the student by means of demonstrations and practical work in the laboratory to transform that information into actual knowledge, and thus prepare him for the coming work of the clinician. That this is the actual condition of physiologic teaching is shown by the establishment of expensively equipped laboratories and the number of hours devoted by the student to practical work. It is hardly necessary to add that in the selection of demonstrations and laboratory experiments preference should be given to those which directly elucidate the function of the human body.

For these and other reasons it is my opinion that applied physiology should be taught in the third and fourth years of the medical course and by the clinicians themselves. This would necessitate of course an acquaintance with physiologic methods and a familiarity with the existing state of knowledge regarding the functions of the organs embraced in any given specialty. The clinician would then be in a position before entering on a discussion of any pathologic condition to recall the physiologic actions of the structures involved and to utilize them in the interpretation of phenomena under consideration. That this is the rational procedure is evident from the natural development of medical studies and their relation one to another in the curriculum. Therefore, clinicians trained in physiology are more to be desired than physiologists trained in pathology or clinical medicine, in the education of the medical student.

W. H. HOWELL, Johns Hopkins.—It seems to me that the value of such courses (applied physiology) is almost self-evident. We have been convinced of their usefulness for some years, and have given our third-year students a course which was first designated as "medical and surgical anatomy," but for some time has been called by the more appropriate name of "applied anatomy and physiology."

The course consists first of talks and quizzes by one of the associates in medicine, followed by a similar series by an associate professor in surgery.

I am under the impression that in this country our clinicians are, as a rule, much better informed on anatomical and pathological studies; that physiology has become to some extent neglected.

If an effort is to be made to introduce courses in applied physiology in all the clinical branches, the first desideratum, it seems to me, is that the subject should be taught by a man who is a clinician in the first instance and acquainted with the practical sides; and second, one who has something more than a practical knowledge of physiology.

I sincerely hope that our country will soon produce some physiological clinicians as well prepared on that subject as some are in pathology.

HENRY P. BOWDITCH, Harvard Medical School.—I agree with you entirely as to the importance of clinical practitioners being better acquainted than they usually are with the principles of physiology. I have always felt that Brown-Séquard was absolutely right when he adopted for the title of the journal which he started, *Archives de Physiologie Normale et Pathologique*, for it is impossible to draw a hard and fast line between physiological phenomena occurring in health and those observed in disease.

If you limit the application of the term "applied physiology" to the phenomena occurring in disease it certainly seems that instruction in these subjects should be in the hands of clinical professors and the proper course for a university would be to require that any person holding such a position should have been trained in a physiological laboratory. If you adopt the broader definition so as to include under the term "applied physiology" the phenomena of health, I think, as I wrote you before, that the department of hygiene should, and in this school does, give the required instruction in connection with the courses on air, water, immunity, etc.

W. C. PORTER, Harvard Medical School.—As stated in my former letter it seems desirable to me that the treatment of each subject in physiology should include its comparative and its pathological sides. Thus phagocytosis and immunity find a place in the physiological course; the utilization of enemata, hydremia, physiological albuminuria and edema are treated with absorption; hemorrhage, the regeneration of blood, and hemolysis are discussed with other work upon the blood; arterial sclerosis and embolism, with work upon the circulation. The course in physiology arranged upon this plan should therefore give excellent introduction to practical medicine. In my judgment the teaching of practical medicine should be based upon physiological and pathological data. These data may be supplied by clinicians who are well grounded in the elements of their respective subjects, or the data may be given under the direction of the clinical staff by teachers taken temporarily from physiological department. It seems important that there should be no further division of responsibility. The physiologist should have some acquaintance with clinical medicine, because pathological phenomena are essential to a complete view of his subject, and it is obvious that clinical men should not forego reference to the essentials of their work.

HENRY SEWALL, University of Denver.—I think I understand what you mean by "applied physiology." The thing that I mean by the term has long been a hobby of mine, and I confess to having ventured not many years ago to lay out a plan for a monograph on the subject.

In my clinical and other lectures I have no opportunity to attempt to trace the successive steps from normal to morbid physiology, and to show the adaptations by which compensations, as in heart lesions, make up for anatomical defects.

The science of physiology is in every case of disease whether it is recognized or not. What is disease for us is physiology for the infecting germ. The result of the union of body cell and microbe comes from their incompatibility of temper, so to speak. It seems to me that if one knew enough of physiology and the reaction of cells to varied environment, the whole of pathology and morbid anatomy might be built up or written down deductively.

GRAHAM LUSK.—I have my father's statement that the immediate success of his book, "The Science and Art of Midwifery," was due to the fact that he had been a teacher of physiology, and for the first time in an English text-book he brought in outlying knowledge previously ignored.

It is said that the student of medicine forgets his physiology at the bedside. I attribute this to the fact that the instructor in medicine, as a rule, has little knowledge of physiology. The cure of the trouble lies in the selection, as teachers of medicine, of those who are naturally studious, and obliging them to spend half their day in college and hospital work with the student body. Such a career means fame for teacher, hospital and college, and true development of power in the student. It should attract the best minds. You see in Frederick Müller and Krehl the type of what is best in medicine to-day. Such types are present with us also, but their practical encouragement is virtually *nil*.

G. N. STEWART, University of Chicago.—I agree with you that it would be advantageous that the application of physiology to practical medicine and surgery should be more emphasized than is often the case in the average medical school.

Whether this should be done by a physiologist well versed in clinical work or by a clinician well versed in physiology is a question which local circumstances would often decide.

Any systematic course on this subject should be given at so late a period in the scheme of study that the student will not only have completed his physiology, but will have advanced a considerable way in the clinical work.

In my teaching I have always sought, so far as is possible in dealing with students who have little or no clinical knowledge, to point out the clinical relations of physiological facts. For example, it has been my practice to give at the end of the course on the central nervous system a lecture on applied physiology, discussing in a general way the physiological data to which appeal is constantly made in the diagnosis and prognosis of nervous diseases. Doubtless many physiologists do teach a great deal of applied physiology, and, of course, clinicians who understand their business of teaching do the same thing. Still I do not doubt that there is ample room for more systematic instruction in this important subject.

WARREN P. LOMBARD, Ann Arbor, Mich.—I agree with you that human physiology ought to

be taught to all medical students. In our laboratory course the students make additions to their usual experiments on frogs and rabbits, with experiments of themselves.

Effect of making and breaking induction currents and the tetanizing current; effect of making and breaking the direct current; effect of anode to lessen irritability, etc.; the myogram; effect of fatigue by voluntary contractions; rate of conduction in nerves; the knee-jerk and its reinforcement.

Reaction time from sound—The radial and carotid pulse—sphygmograms, under varying conditions; the postponement of the pulse.

Length of systole versus radial and carotid pulse; blood pressure under varying conditions—sphygmomanometers; changes in the size of the finger, with pulse, respiration, and reflex excitation—plethysmograph; rate and form of respiration under varying conditions and relation to the pulse-pneumograph. Rate and form of respiration under varying conditions, and relation to the pulse pneumograph.

After relating some further methods in use, Dr. Lombard says, "I think much more could be done in this direction than we are doing at present. The principal difficulty is that we lack methods for studying various forms of functional activities."

MURRAY GALT MOTT, Georgetown University, D. C.—I feel that never before has there been so much need in our medical schools of physiology as applied to medicine.

I greatly deplore the tendency to minimize the importance of physiology as an intensely practical branch of medicine. This tendency is seen in the provision of some of the State examining boards, whereby undergraduate students at the end of the second year are permitted to qualify in anatomy, chemistry and physiology.

The inference is they may well forget these branches by the end of the fourth year; and, as they have been taught in the past, it might be as well.

There is still another phase of this question, which demands attention on the part of the faculty curriculum committee; namely, the proper coordination of physiology with the other so-called fundamental branches. It seems to me absurd to attempt to teach physiology to students not thoroughly grounded in general anatomy, general chemistry and physics. Still more absurd is it, as it seems to me, to call that a graded course in which the same lectures are delivered to first and second, or second and third year students together.

Yes, I am heartily in favor of a department of applied physiology; I would put it in the fifth year, which Cornell is planning, and I would place it in charge of a man who has had sufficient experience in general practice to know, and not merely theorize on, the applications of physiology; more than this, I would give him a place on the general staff of the college hospital,

and require him to demonstrate both normal and abnormal physiology at the bedside.

COLIN C. STEWART, Dartmouth Medical College.—The failure of the average clinician to think in terms of physiology is, I believe, due to his general ignorance of the subject; and his ignorance is in nearly every case due to his neglect of his opportunity to learn it.

The average medical student looks upon physiology as a preparatory subject only. Though the subject is an enormously large one, and though the instructor must be familiar with the whole field before he can ever hope to be a successful teacher, it is by no means true that the whole subject should be taught to medical students. There is ample time in the course to point out the bearings of the stated facts, and to refer to related pathologic processes. Many instructors do this, but they are handicapped by the fact that their students have as yet had no clinical experience.

The difficulty could be entirely overcome by taking the clinical work in the second year of the four. It would be of advantage to continue this course to include mammalian work done by students themselves, only possible with small classes, not more than four each. With small classes this work has been done for several years at various schools, namely Hopkins, Columbia, Western Reserve, etc., with excellent results.

Another serious fault in the teaching of physiology in most schools is that, in developing laboratory work, there has grown up the habit of omitting demonstrations from the lectures. There is some excuse for this with large classes because of the difficulty of showing a small object to a large number at once. Demonstrations given separately can never take the place of lecture demonstration. I know of no more valuable courses of lectures than those given by Prof. Howell at Johns Hopkins, by Prof. Bowditch at Harvard, and by Prof. Curtis at Columbia; these are illustrated throughout.

FREDERIC S. LEE, Columbia University.—The lack of adequate application of physiologic principles in the clinical instruction of the medical student has been long an obvious and lamentable fact. It appears to me very important that every department of medical instruction should be, in a considerable degree, a department of applied physiology. To do this the clinician must be familiar with physiologic facts and principles. The student of the physiologic sciences of the present will be the clinical teacher of the next decade, and he will carry with him the ability to think in terms of physiology.

JAMES J. PUTNAM, Professor of Neurology, Harvard Medical College.—"It is evident that the physiologic principle is in the air." He goes on to say that it is essential in the right understanding of neurology to go much deeper and depend more fully upon physiologic explanation than is done. This was the subject of his address before the International Congress of Arts at St. Louis.

ISAAC OTT, Easton, Pa.—The teaching of physiology to medical students without its application to the practice of medicine is a barren procedure. In my text-book I have made this an important feature. There is no doubt that lectures upon the subject of physiology would be a great gain. Dr. L. Krehl in his "Pathologische Physiologie" has partly filled this need.

HENRY BEATES, JR., President of the State Board of Medical Examiners (Pa.)—I wish it were possible to insist that the professor of physiology in every faculty should be identified with hospital work. We would thus build up a physiology with which the undergraduate body should be made thoroughly familiar, based upon the interpretation of clinical phenomena reinforced by chemical and pathologic reading and ratified by appropriate laboratory studies. No teacher of physiology should be less than an experienced clinician.

AUSTIN FLINT, New York University.—I believe that a professor of physiology should be a practitioner of medicine and should give much time to the teaching of applied physiology; but the general practitioner or clinical teacher, unless he is a close student of physiology and keeps up with its progress, is likely to make serious errors in referring back to physiology. In my opinion it is preferable for the physiologist to make the applications of his subject to practical medicine.

The above being the rôle of the professor, his lectures should be supplemented with practical demonstrations to students in laboratory work sufficient to teach students the methods of physiological instruction, so that clear ideas may underlie what students are expected to acquire by efforts of memory, otherwise, when the memory of details fade, everything is lost.

As regards physiology, the fact that its teaching is often given over to pure physiologists, most of whom are not practitioners and have little knowledge of practical medicine, is gradually separating this important subject from medicine, to which it should become more and more closely allied as knowledge progresses.

JOHN C. CURTIS, Columbia University.—Regarding lectures upon "applied physiology," I must quite frankly say that the proposal of such does not commend itself to me. The applications of physiology should, in my judgment, be pointed out partly by the physiologist and partly by the clinical teacher, in order to be effectively dealt with, and to react effectively upon the teaching of physiology and of clinical medicine and surgery.

WINFIELD S. HALL, Northwestern University Medical School.—"I believe that your position is altogether the correct one. I have been convinced of the inadequacy of the teaching of physiology for several years and have endeavored to correct this so far as possible in our own institution. I find, however, that the presentation of physiology as an experimental science necessitates the introduction of many ex-

periments and discussions that do not have a direct clinical application. My new Manual of Experimental Physiology will show you how near I was able to solve the problem. I am not, however, satisfied with that solution, and have already attempted another, which I think is quite in line with what you propose. I have been revising my text-book of physiology and have written an addition to each chapter of special physiology, which I have entitled "Pathological Physiology" of Blood, Circulation, Respiration, Digestion, Metabolism, etc., etc. These several sub-chapters appear at the end of the respective chapters of normal physiology. It is proposed that each medical class shall have a course in pathological or applied physiology during their junior year after this year. This course will be given by men who are at present in active clinical work, but men who have had a thorough physiological training in experimental physiology."

ON THE HYPODERMIC USE OF ADRENALIN CHLORIDE IN THE TREATMENT OF ASTHMATIC ATTACKS.¹

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SINCE the appearance of a like article in the MEDICAL NEWS, October 24, 1903, several observations were made which somewhat modify our original conceptions, especially in regard to dosage as well as in regard to results from the use of the drug. An opportunity for studying a greater number of cases of asthma has caused a radical change in the dosage of the drug. Further insight has led us to include among the exceptions what we previously considered the most effective results as observed in the patients previously treated. However, the promptness with which an attack of asthma is checked in every instance, made adrenalin chloride in the Montefiore Hospital a very popular drug and a remedy thoroughly to be relied upon in asthmatic seizures. Up to date it still holds its reputation, for when properly used no failures have been encountered. Before the proper posology of the drug was understood a few failures were encountered. These failures mainly caused the studies in this paper and a brief consideration of the first few will not be out of place.

Case I.—Mrs. M., aged thirty-five years; married; houseworker. Family history negative. Personal history: Had much worry and excitement; rest, of no importance. Previous affections: None up to present illness. Present illness: After exposure to cold during the winter of 1901 began to cough. Bronchitis lasted two months. After the subsidence of the bronchitis patient developed periodic severe attacks of dyspnea coming on after exertion. No medicine did her any

good. In 1903 dyspnea was so severe that she had to enter a hospital.

Status Præsens.—Female patient, average build; no skeletal deformities excepting barrel-shaped thorax. No somatic nor psychic stigmata of degeneration. Vegetative organs in a good condition. Signs of disease: Neck short and thick; sternomastoids hypertrophied; auxiliary muscles of respiration brought into play during expiration. During inspiration thorax lifted en masse. Heart: Boundaries and force obscured by extensive emphysema; no murmurs. Pulse: Diminished tension, 90 per minute. Blood pressure: Systolic, 130; diastolic, 85. Lungs: Palpation; tactile fremitus very much diminished all over the chest. Percussion above clavicles, slightly impaired note; below clavicles, pulmonary resonance increased throughout. Inspiration short and harsh, expiration long and wheezy. Typical asthmatic râles all over chest.

Laboratory Reports.—Average urine examination: Quantity in twenty-four hours, 1,200 c.c.; sp. gr., 1.014 to 1.019. Reaction acid. Albumin, absent; sugar, absent; bile pigment, absent; blood, none; urea, 14 to 20 grams; indican, none. Chlorides and sulphates, normal; diazo, negative. Microscopical examination: At times triple phosphates and a few white blood corpuscles.

HR.	Red Blood Corpuscles.	White Blood Corpuscles.	Neutrophiles Per cent.	Basophiles Per cent.	Eosinophiles Per cent.	Large Lymphocytes Per cent.	Small Lymphocytes Per cent.	Transitional Per cent.	Myelocytes Per cent.
120	5,600,000	4,000	88						
110	4,032,000	10,000	76						
100	6,224,000	7,200	69						
90	4,616,000	7,400	71						

Sputum Examinations.—Quantity large after an attack. Tenaceous and frothy. No blood, no tubercle bacilli. After standing for thirty-six hours a few Charcot-Leyden crystals. Many hundreds of eosinophile cells, a number of which are of the myelocyte type. Only on one occasion was a Curschmann spiral seen about $\frac{3}{4}$ cm. long.

Gastric Contents Examination.—Free hydrochloric acid 0.17 per cent.; normal in every other respect.

Feces Examination.—No blood, undigested food or any other pathological matter.

This patient, whose attacks were extraordinarily severe, received on one occasion 10 minims of adrenalin chloride at a dose. After a lapse of ten minutes no relief followed. In order to relieve her sufferings large doses of narcotics were resorted to, for at that time it was not thought advisable to inject more adrenalin chloride. When a still more severe attack developed next day it was decided to give a larger dose than had been administered before; 20 minims were injected in one dose. Five minutes later both the subjective as well as the objective symptoms of the attack were very much relieved and sleep followed. For a period of three weeks the attacks were cut short by doses ranging from 20 to 25 minims, given in

¹ Continuation of an article on this subject in MEDICAL NEWS, October 24, 1903.

two injections ten plus ten or fifteen plus ten. Each time complete relief promptly followed. Since then attacks can be controlled by 10 to 15 minimis, the effect of the drug being manifested by the interesting phenomena to be spoken of later. This also tends to show that there is no tendency to the formation of a habit and that a tolerance to the drug is not established.

Case II.—Male, aged forty-eight years; married; driver. Family history: Father died from a cerebral hemorrhage. Personal history: Childhood eventless. Married at twenty-two. Wife suffers from a pulmonary affection for a number of years. A son, twenty-two years old, suffers from Pott's disease of the spine. Patient's habits are moderate. Present illness began four years ago with a neglected cold. Had attacks of great dyspnea which were relieved by bringing up phlegm. Dyspnea came on every week and would last a few days. These attacks appeared more often before or during bad weather and more frequently during winter than summer. During last three years patient lost 35 pounds. Never had hemoptyses.

Status Præsens.—Tall male, no skeletal deformities. No stigmata of degeneration. Vegetative organs in good condition. Panniculus adiposus deficient. Signs of disease: Thorax average length, width and depth; epigastric angle obtuse. Sternomastoids prominent and hypertrophied. Heart: Apex beat weak and preceded by a soft thrill. Cardiac dulness obscured by emphysema. Auscultation: All cardiac sounds weak and distant, no murmurs. Pulse: Poor tension, 80 per minute, regular, equal on both sides. Blood pressure: Systolic, 130; diastolic, 105. Lungs: Respiration costo-abdominal in type. Most of the respiratory movements are not anteroposterior but from below upward, lifting the entire chest en masse. Palpation: tactile fremitus diminished all over. Percussion: Pulmonary resonance increased all over. Auscultation: Prolonged expiration with scattered large and small wheezing and whistling râles.

Laboratory Reports.—Average urine examination: Quantity in twenty-four hours 1,560 c.c., sp. gr. 1.013 to 1.019. Reaction acid. Albumin never. Sugar never. In every other respect normal. Urea average 14 grams. Microscopically at times a few crystals of triple phosphate.

Hb.	Red Blood Corpuscles	White Blood Corpuscles	Neutrophiles Per cent.	Basophiles Per cent.	Eosinophiles Per cent.	Large Lymphocytes Per cent.	Small Lymphocytes Per cent.	Transitional Per cent.	Myelocytes Per cent.
100	3,500,000	13,200	47	1	11	17	21	3	
100	6,108,000	7,400	52		12	10	26	2	
100	5,920,000	11,800	72		6	6	14	2	
110	5,760,000	8,400	69	1	6	7	15	2	

Sputum Examination.—Average quantity; frothy viscid. No tubercle bacilli; very few Charcot-Leyden crystals after standing for thirty-six hours. No Curschmann's spirals were seen. A few eosinophile leucocytes and myelocytes.

Gastric Contents.—Free hydrochloric acid 0.14 per cent., otherwise normal.

Feces Examination.—Negative.

In this case an initial injection of 5 minimis of adrenalin chloride was given and the patient observed for ten minutes. Dyspnea was not in the least influenced, the râles were as abundant as before and the pulse tension still as poor as before the administration of the drug. It was thought advisable to give 10 minimis more. As a result the pulse tension was slightly better, but the dyspnea was hardly influenced and the wheezing and sonorous râles, were as loud and as abundant as before. Discouraging as this experience was, the use of the drug was not given up and in another attack 10 minimis were injected, followed in five minutes by 10 minimis more. The pulse tension was at this time appreciably better and the patient felt somewhat relieved, but there were still râles in abundance all over the chest, and half an hour elapsed before there was a decided improvement in the breathing. It was therefore inferred that in some cases where the disease has produced pronounced emphysematous changes the attack will not be influenced as readily by small single doses which are efficient in patients whose disease is not so far advanced. When another attack developed 20 minimis of adrenalin chloride were at once injected. This time the patient felt much better in less than five minutes, the dyspnea entirely disappeared, but auscultation still showed a number of râles here and there. It was then decided that this patient should always receive a large dose at the first injection, to be followed by a smaller one after a short interval. The next attack was entirely cut short by an initial dose of 15 minimis followed in three minutes by another of 10 minimis. This time there was a marked improvement in both subjective and objective symptoms. Evidently, the intrathoracic status of this patient had progressed to such a degree that the above heroic measures were necessary to influence it. Attempts were made to cut short succeeding attacks with smaller doses, such as 10 minimis followed in a few minutes by 5 more with sufficient success to hope that in the future gradually smaller doses will suffice.

The above experience and a number of others allow the conclusion that a constant method of treating asthmatic attacks with adrenalin chloride is not to be thought of, but, that each case must be treated individually. This being the case, the next question that naturally suggests itself is, By what data is one to be guided in treating an asthmatic seizure, and what are the limitations to the use of adrenalin chloride?"

These questions can be answered only by a knowledge of the patient's previous attacks, his lung status, namely, the extent of the emphysema, the diminished elasticity of the pulmonary parenchyma and the secondary effects on the heart and blood vessels. In individuals of adult age who have suffered for a long time, whose attacks develop nearly every other day, each seizure lasting

four or five hours on an average, where large doses of narcotics would give no relief, it is evident that a large initial dose of adrenalin chloride will be required. This large dose is especially indicated where extensive emphysema and a weak heart complicate the case. However, large doses should never be given if no more than the above is known about the patient. What is of prime importance and that which is the safest guide to the amount of adrenalin chloride to be injected, is the condition of the pulse. A careful study of the heart and pulse as to regularity, force and tension is indispensable.

This cannot be too strongly emphasized. By this factor alone a great deal can be learned as to the amount to be used, for the less the tension in the radial artery the less the tension in the pulmonary capillaries, therefore the dose must be larger to augment this tension.

Again, if the patient is old, is naturally of a neurotic temperament, or has decided arteriosclerotic changes, this being easily ascertained by a careful study of the pulse, such a patient should receive a guardedly small initial dose, for it is self-evident what might follow the use of a large quantity of adrenalin chloride in an individual with brittle arteries. In such a case, an initial dose of 5 or 6 minimis should be resorted to and if this gives no relief another similar dose five minutes later. Meanwhile the pulse is to be observed, an increase in the tension being an excellent indicator that the seizure is subsiding. If there is no appreciable increase in the tension, another dose of 5 minimis can be injected with safety, until the pressure is decidedly raised. Thus an idea is readily formed as to the quantity necessary to influence an attack, and the next seizure that develops is treated by a correspondingly larger dose at the first injection.

The patients at the Montefiore Hospital receive an initial dose of 5 or 10 minimis, according to the condition of the patient, and from the experiences at the first treatment the dosage for a future attack is learned, which is usually higher in the beginning and tends in the course of the treatment toward a smaller dose.

A few words as to patients suffering from functional or organic nervous disorders. All neurasthenics, as a rule, who receive adrenalin chloride are influenced to the full physiological extent by comparatively small doses. If such a patient is not affected by 5 or 10 minimis the dose can be increased to 15 minimis the next time, the result being an exaggeration of the constitutional effects of adrenalin chloride. These effects will be spoken of later.

Patients who suffer from multiple sclerosis or locomotor ataxia are similarly influenced by such small doses as 3 or 5 minimis. The spasticity in the first, in the second the ataxia is markedly exaggerated, together with the other signs of the action of the drug.

Next in importance is the ability to recognize whether the drug is producing its full effect. This

is always accompanied by a train of symptoms which must be obtained in every case before one can be sure of the effectiveness of the treatment. If the injections are not carried to this point the seizure may recur in a short time with as much distress to the patient as if no adrenalin chloride had been administered.

The symptoms which develop are the physiological effects of the drug and always take place when amounts are given which completely check the attack. These symptoms will be described seriatim. First and of greatest moment is the increase in the tension of the pulse. This phenomenon takes place in from three to ten minutes from the time of the injection, the time of its appearance depending upon the amount injected, the patient's age, his heart and lung status, the duration of the attack and his nervous irritability. It will be found that a pulse which before the injection was hardly perceptible becomes distinctly appreciable, and it takes more pressure to obliterate the artery than before, a fact which can be conclusively demonstrated by sphygmographic and blood pressure readings. Below are a few such observations. (The instruments were not removed while observations were made, but remained on the arm until the full effect was obtained.)

Case I.—Observations made during one of the attacks. 2.19 P.M., Pulse, 78, of poor tension. Systolic pressure, 120; diastolic pressure, 85. 2.20 P.M., 15 minimis of adrenalin chloride were injected; 2.24 P.M., dyspnea slightly better; 2.30 P.M., tension better; dyspnea nearly gone; tremor of fingers; 2.36 P.M., pulse, 72; tension, good; systolic pressure, 135; diastolic pressure, 100. Attack over. Signs of attack gone.

Case II.—4.20 P.M. pulse, 106; systolic pressure, 135; diastolic, 110; 15 minimis of adrenalin chloride were injected. 4.25 P.M., no improvement; 10 minimis more were given. 4.30 P.M., dyspnea less distressing; pulse tension rising; râles still abundant; no tremor. 4.40 P.M., pulse, 106; tension decidedly higher; systolic pressure, 170; diastolic pressure, 120; dyspnea gone; râles rapidly vanishing; tremor of fingers slight. Patient very much relieved.

It will be seen from the above data, that most of the dyspnea is gone and the asthmatic râles not so loud and less numerous. Accompanying this improvement is a distinct pallor of the face. The treatment may be stopped here, the patient feeling much relieved, but unless, after a lapse of five minutes the other symptoms appear, the attack is liable to return the same day or night. The next symptom is highly characteristic of a subsiding asthmatic attack, whether treated by adrenalin chloride or otherwise, namely, coughing up a little frothy mucus. This gives the patient considerable relief, the dyspnea being nearly gone and the auscultating ears are hardly able to detect a râle. By this time the blood pressure and vigorous cardiac action have reached their acme, the sphygmograph conclusively demonstrating the latter. In

every case where pulse tracings were made it was found that the systole is shortened and the diastole lengthened, the drug acting exactly like digitalis, only much more diffusibly. If the treatment has been successful the third symptom will appear in the shape of a coarse tremor all over the body, best observed in the extended fingers of the hand. This tremor also affects the speech, the tongue being distinctly tremulous. This sign usually takes place soon after the expectoration of phlegm, the patient always noting its advent by a feeling of nervousness. Though this is not an agreeable feature to the patient, the tremor at times lasting half an hour, this point must be reached before one can be certain that the attack has been completely checked. If it takes more than fifteen minutes for this symptom to appear another dose of 5 minims should be injected. It often happens that together with the tremor the patient experiences a sense of oppression or even pain over the region of the heart, giving him an anxious look, but this cardialgia is of no importance and can be readily relieved by an ice-bag to the precordium, if necessary. In my experience serious results have never been observed. The description of these symptoms will not be complete without an attempt at their elucidation: The first symptom to be explained is the increase in the blood pressure. I have been able to demonstrate this by the following experiments: (a) An animal under chloroform anesthesia, whose heart commenced to give out, received 3 minims of adrenalin chloride into the general circulation; in less than one minute the heart resumed its action with as much vigor as if nothing had happened to it. At the same experiment the heart was allowed to cease beating for one minute, then 3 minims of the drug were injected directly into the heart muscle, this time it took only a few seconds for the heart to resume its activity. (b) By its effect on an inflamed conjunctiva its contracting action on the arterioles can be readily seen. (c) Contraction of the vessels regulated by the splanchnic system of nerves as shown by the pallor of the stomach and intestines after the use of the drug. (d) Stimulation of the vasomotor center in the medulla.¹

The second symptom is the cough and expectoration; this is due to an increased secretion from the trachea and the bronchi. It has been proven that adrenalin chloride is a stronger antagonist to atropine than pilocarpine. (See Cushny). The tremor is most likely due to an action upon the skeletal muscles similar to that exercised by the drug on visceral muscles.

Next to be considered are a few drawbacks to the use of adrenalin chloride, which have occasionally appeared in the extensive literature on this drug. Among the most disagreeable effects noted was the development of gangrene at the point of injection.

Since the introduction of the use of this remedy in the Montefiore Hospital at least 4,000 in-

jections have been given by me, mostly to relieve asthmatic attacks, but also for heart failure, pulmonary hemorrhages, metrorrhagia, etc., but at no time was anything suggesting gangrene noticed, in fact, we have experienced no trouble at any time. Another drawback is glycosuria, which is reported to be a constant accompaniment to the use of this drug. To study this question experiments were performed in the following manner: Twelve patients, who were to be experimented upon, had their urine examined for two weeks and no sugar was found. (During these two weeks these patients received no medicines.) Then followed a series of tests for two weeks; each patient receiving from 30 to 45 minims of adrenalin chloride daily.

The results among 360 urines thus tested were as follows:

	Average pro die	
	Before Adrenalin	After Adrenalin
Quantity.....	1,225	1,166
Reaction.....	acid	acid
Sp. gravity.....	not changed	not changed
Albumin.....	none	none
Uropeptone.....	none	none
Albumoses.....	none	none
Bile and blood pigment	none	none
Indican ¹	none	none
Chlorides.....	normal	normal
Sulphates.....	normal	normal
Sugar.....	none	none
Diazo.....	negative	negative

¹ One patient, whose urine contained an increased quantity of indican before the use of adrenalin chloride, also gave a strong reaction of indican after the administration of the drug.

Microscopical Examination.—No change; no casts; no blood or other indications of interference with the kidney functions were observed.

The urines of three diabetics were also examined and careful quantitative tests were conducted for ten days. For the following ten days each of these patients received 45 minims of adrenalin chloride daily, hypodermically, and the urines were tested in the same way. There was no increase in the amount of sugar excreted, on the contrary, a diminution was noted, as can be readily seen below:

Patient I. —Before adrenalin, 1.47, after adrenalin, 1.25

Patient II. —Before adrenalin, 1.48, after adrenalin, 1.35

Patient III.—Before adrenalin, 2.06, after adrenalin, 2.06

If a conclusion is to be permitted from the number of patients studied in the Montefiore Hospital, it is safe to say that the contra-indications to the use of adrenalin chloride are generally overstated.

If carefully administered the drug may be used in effective dosage even in subjects with arteriosclerosis.

It is fair to contend that we have in adrenalin chloride a drug which is more efficient in the relief of asthmatic attacks than those ordinarily used in the treatment of those conditions.

¹ Cushny. *Pharmacology and Therapeutics.*

That even large doses of the drug freely used do not give rise to a glycosuria.

That adrenalin chloride has a distinct place in the therapeutics of asthmatic seizures.

Although relieving the paroxysms with greater promptness and certainty than most of the other drugs at our command the hypodermic use of adrenalin chloride is in no sense curative of the disease as such and equally useless are prophylactic injections.

In closing, I wish to express my sincere thanks to Dr. Harlow Brooks for his kind advice and instruction.

My thanks are also due to Dr. S. Wachsmann, house physician to the Montefiore Hospital, for his kind permission to use the materials for the above studies. I regret that the absence of Dr. Jesse G. M. Bullowa has prevented him from collaborating with me in the preparation of this work.

PRINCIPLES GOVERNING THE TECHNIC OF ROENTGEN RAY THERAPY.¹

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ON account of the great variation in the results obtained by those using the X-ray for therapeutic purposes there is evidently a variation in their apparatus and manner of application. The manner of application is of more importance than the apparatus, because the deficiencies in the apparatus can usually be overcome or compensated for by duly regulating the other factors concerned in the application.

The manner of application should be based upon the physical laws governing the ray, the pathological action of the ray upon living tissues and the pathological condition to be treated. Due consideration of these principles by all operators will make the technic more uniform and the results more constant.

The Roentgen ray is a form of radiant energy and consequently its energy, or power to do work, varies inversely as the square of the distance from the source of energy, which is the reflector usually attached to the anode. More energy is given off from a tube when there is less resistance in the tube or secondary circuit. A larger proportion of the energy from such a tube is absorbed in the tissues, that is, it does not entirely penetrate.

To state these two propositions conversely: A soft or low vacuum tube, or one having less resistance in the tube or secondary circuit, gives forth a larger absolute amount of energy and a larger proportion of absorbable energy. A hard or high vacuum tube, or one that has great resistance in the tube or secondary circuit, gives forth less amount of energy and a proportionately smaller amount of absorbable energy; that is, it gives forth a penetrating ray with little energy.

In the above paragraphs by the word energy is meant the physiological "working power" of

the rays. This power is due rather to the quantity of the rays than to their penetrating quality or to the mass multiplied by the velocity.

From a soft or low resistance tube there is given off a large quantity of rays of small penetrating quality of low velocity; and from a high resistance or hard tube is given off a smaller quantity of rays of high penetrating quality with high velocity.

From the physical standpoint the energy emitted may be the same, but physiologically the "working power" varies greatly.

Naturally, therefore, the most effective therapeutic ray is not the most penetrating ray, but the reverse. One must be cautious not to mistake a ray that does not penetrate on account of weakness or lack of energy from one that does not penetrate on account of its natural quality. A little experience readily differentiates these two conditions.

The principal fact in connection with the physiological action of the ray is that it appears to affect the life or vital principle which resides in the cells alone. At first there is an apparent stimulation or an increase of the vital functions. This stimulation is quickly followed by a cessation of the vital activities. Life leaves the cells. The cells now degenerate and the debris is absorbed or cast off. In doing so they excite the changes in the tissues which are commonly termed inflammatory and are consequent upon the degeneration, absorption and repair. The cells in which the vital manifestations are most active as represented by their functional or proliferative activity are the cells that are most readily influenced by and succumb to the ray's destructive influence. The vitally active cells are more complex in their mechanism and hence most readily disturbed. The tissues are acted upon in proportion to their cells and in proportion to the activity of their cells. This explains the specific or selective action of the ray upon malignant growths which are composed of cells and these cells very active.

To produce a stimulant action only a small dosage should be given. This is illustrated by the fact which more than one operator has observed that patches of psoriasis have healed on the opposite side of the body to which the ray is applied, apparently showing that even the small amount of energy remaining after the ray has penetrated the body is sufficient to stimulate the morbid cells of psoriasis to their normal activity.

Every operator should by experiment or by experience determine the number of minutes which under fixed conditions are required to produce a reddening of the normal skin. With this as a guide, by properly regulating the controlling factors he can bring about any desired effect from stimulation to necrosis, and from a superficial effect to one that is nearly uniform from the surface to several inches beneath, if we can exclude the energy lost by absorption.

To produce a superficial effect the tube should

¹ Read before the Richmond (Va.) X-ray Conference, March 7, 1905.

be close to the surface, and for a deep effect the tube should be far from the surface. This point has been more elaborated in an article published in the MEDICAL NEWS of March 26, 1904.

Superficial carcinoma can be destroyed without producing even a redness of the surrounding normal skin because of the selective action of the ray for such growths as has already been explained.

The result of an exposure is not perceptible for a variable number of days thereafter. Therefore no more than the number of minutes required to produce a redness should be given in a week or ten days, unless a necrotic effect is to be produced.

Treatment should be given in series of daily exposures with intervals of several days between series to watch the effects. The sum total of the number of minutes should approximate the average that has been found by experience to produce the effect desired. It is not advisable to accomplish this in one or two exposures until our means for measuring the quantity and quality of the radiant energy from the tube are more accurate and idiosyncrasy becomes a better known factor. The effect should be approached gradually, and not less than four exposures should be given in one series.

Idiosyncrasy should not be ignored, although it has undoubtedly been held responsible for the effects resulting from a lack of appreciation of other factors. The idiosyncrasy or susceptibility of the skin in different parts of the same individual doubtless varies more than similarly situated skin of different individuals. A part that has once been affected by the ray becomes more susceptible to the ray's influence. This fact should be duly considered in giving treatment in series by making subsequent series shorter.

For the bactericidal effect of the ray sufficient energy must be given in a single exposure to destroy bacteria, otherwise the bacteria regain in the interval between exposures the vitality only impaired by a short exposure. It is for this reason that patches of lupus must be given more prolonged exposures than non-parasitic conditions. The treatment must usually be carried to the point of necrosis of the superficial cells before the bacteria lying beneath them are destroyed.

The above remarks are based upon the physical laws and observations, the result of experience and experiment. They may be modified by further study. There are certain points to be more satisfactorily explained or determined, (1) the cause of the anodyne effect; (2) the proportion of the effectiveness of the ray lost by absorption in or in penetrating the tissues; (3) the reason why a few layers of gauze, the resistance of which to the ray is hardly perceptible on the fluoroscopic screen, should diminish so markedly the effect upon the skin and also the bactericidal effect; (4) Is the X-ray made up of rays of different physiological action?

It is to be hoped that those having the oppor-

tunity will carry out such studies for the solution of problems so essential to the full development of this new and powerful therapeutic agent.

COMMON CAUSES OF GYNECOLOGICAL DISEASE, WITH SOME REMARKS ON PROPHYLAXIS.¹

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IN selecting a subject on which to address you, I was naturally tempted to choose a surgical topic, and to discuss some operative procedure, with the results in my own practice, but on reflection it has seemed to me that it would be best to avoid a technical subject, of interest only to the specialist or surgeon, and to take one which would be of interest to the greatest number. Therefore, I have chosen a broad one, where we can all meet on a common ground to our mutual benefit. For whether one devotes himself to surgery or medicine, the responsibility of subsequent gynecological disease may often lie at the physician's door.

It is a remarkable fact that in the standard textbooks of the Diseases of Women, it is extremely difficult to find any reference to the subject of prophylaxis in gynecology. It is true that in the descriptions of a disorder, for instance, as in subinvolution, the various causes that bring about this condition will be mentioned, so that the student may infer that the avoidance of these causes would naturally be the prophylaxis of the disease. But a collective study of the causes and prevention of the diseases of women, the subject being treated as a whole, so as to enable the student to appreciate why woman, in her highly civilized state, should be so prone to disorders of her generative organs, is not usually found in text-books on gynecology.

This is regrettable, as a large proportion of these diseases are preventable, and if the causes and etiological factors were given more prominence in the teaching of gynecology, the physician would be influenced to avoid these pitfalls, and thus save many a woman from an operation or chronic invalidism.

Prophylaxis means prevention, and in order to intelligently prevent the occurrence of any disorder, it is paramount that we understand the cause. An analysis of the various gynecological diseases soon shows us that gonorrhea and some trouble with the child-bearing function, in one manner or another, are the most prolific causes of a majority of the disorders.

The period of puberty is a time when improper habits and hygiene may have an important bearing on the future condition of the pelvic organs. The child who at this age is not allowed to romp and play, whose abdominal muscles are early imprisoned by tight corsets, who has not sufficient sleep, and who lives on improper food, will reach

¹ Read by invitation before the Practitioners' Society of Eastern Monmouth, at Red Bank, N. J., on February 16, 1905.

the child-bearing age with an excess of fat in her muscle tissue, and with undeveloped abdominal muscles and uterus. The natural result is inertia uteri, and the necessity of artificial delivery with its dangers. Constipation, improper attention to the function of micturition, and imprudence during menstruation, are habits usually acquired during puberty, and these, coupled with too frequent child-bearing, are productive of disease. Their frequency is well exemplified in the old definition of a woman, as "a being who micturates once a day, defecates once a week, menstruates once a month, and parturates once a year."

Gonorrhea in the female is recognized to-day as one of the most dangerous of diseases. Its true position, and the destructive lesions that it may lead to, have been so emphasized of late by the ablest authorities, that the physician in general practice is beginning to understand why the specialist fears it worse than syphilis.

It is of interest to know that the present opinion of the true import of this disease is in perfect accord with the views advanced by Noeggerath in 1876, nearly thirty years ago. At the time of the founding of the American Gynecological Society, he published his deductions which are recognized as truths to-day. He stated that "Gonorrhea in the male, as well as in the female, persists for life in certain sections of the organs of generation, notwithstanding its apparent cure in many instances;" that "there is a form of gonorrhea which may be called latent gonorrhea in the male, as well as in the female;" that "latent gonorrhea in the female, either the consequence of an acute gonorrhreal invasion or not, if it passes from the latent into the apparent condition, manifests itself as acute, chronic, recurrent peritonitis or ovaritis, or catarrh of certain sections of the genital organs;" that "about 90 per cent. of sterile women are married to husbands who have suffered from gonorrhea previously to or during married life." How near the truth he was thirty years ago we all realize now. According to Wertheim, gonorrhea is the most frequent cause of suppuration in pelvic diseases. Sänger states that one out of every eight cases of gynecological disease is due to gonorrhea as the underlying cause. Sänger and Rosthorn found disease of the tubes in 33 per cent. of all women affected with gonorrhea.

In studying gonorrhea in women, we find that the seriousness of the disease in any case is dependent upon its location. The destructive lesions, resulting from the infection, are found in the uterus, tubes or ovaries, and the pelvic cavity. These lesions produce the serious sequelæ which ultimately terminate in the calamities of castration, salpingectomy and hysterectomy, with the resulting sterility or premature menopause. When the disease is confined to the regions below the cervix, its manifestations are mild and of far less consequence to the woman, than in the situation just mentioned. It behooves us therefore in every case of suspicious discharge from the

lower genital tract, to make immediate microscopical investigation, for no one can say any discharge is or is not gonorrhreal without the aid of the microscope. Should the gonococcus be demonstrated, the first thought in our minds should be to limit the scourge, and confine its ravages below the danger zone—the cervix. Our handling of the case then, to be rational, should consist in protecting the vulnerable uterus and its appendages from the invasion, and to endeavor to destroy the gonococci as speedily as possible wherever found.

Yet, what is the method most in vogue when a patient presents herself with an acute attack of vulvitis or urethritis? A douche containing some germicide is the usual prescription, and the woman goes home and inserts the douche nozzle through the vulva opening which is bathed in gonorrhreal pus, and carries the same as speedily as possible to the region of the cervix. The method I have followed for a number of years, in treating these cases is to absolutely prohibit the douche, to make a thorough local application to the whole vulva, and any portion of the vagina if affected, with a 20 to 30 grain to the ounce solution of nitrate of silver on a swab, and then to pack the upper vagina with gauze saturated in a 1/5,000 solution of bichloride of mercury, to wall off and protect the cervix from the danger of an extension of the disease from below. The patient is then instructed to frequently bathe the external genitals with a bichloride or other germicidal solution. This treatment, repeated every other day, will in three or four applications cause a subsidence of the manifestations of the disease, and, I believe, will save many cases from an involvement of the uterus and its appendages. I would urge the importance of regarding every acute discharge in women with suspicion, and prompt detection and vigorous local treatment of this disease in its early manifestations, is a most important preventive of serious pelvic trouble. A few years ago Polk, in a communication to the New York Obstetrical Society, advanced the proposition, that given a case of recent gonorrhreal infection of the uterus, with commencing tenderness and enlargement of the tubes, instead of treating the condition expectantly, one should promptly open the cul-de-sac, incise the tubes, and insert a gauze drain into the vagina as an abortive measure for pyosalpinx. Why are we justified in waiting and doing nothing, thus allowing the tubes to become distended with pus, and to be hopelessly destroyed, any more than the otologist would be justified in neglecting to incise the tympanum in acute purulent infection of the middle ear, to prevent destruction of the ossicles and invasion of the mastoid?

A common means of the transmission of the disease from one patient to another, is from the improper sterilization of specula, sounds, etc., that the physician uses during his examination or treatment. The only safe method is to boil all instruments after each use. An ordinary fish-

kettle over a gas burner should be kept going throughout the office hour, and thus the instruments may be dropped in and rendered absolutely safe in a few moments.

Investigators agree generally that in about two-thirds of all women who seek relief from the gynecologist, the cause is directly traceable to trouble which has its origin in pregnancy. In a study of a series of consecutive cases of operative gynecology, occurring in my service at the Post-Graduate Hospital a few years ago, where it was possible to be reasonably certain of the cause of the disease, the exact percentage was 65.¹ On the face of it, this would seem to show that in some way or other, we as physicians are woefully unskilful in our management of pregnancy, or that womankind in the state that we find her has become so changed in regard to her physical condition from that of her sisters in precivilized times, that in a large number of cases she is no longer capable of bringing forth her offspring without artificial aid, or her health is seriously impaired by what we understand is a purely physiological function. The truth is undoubtedly that the mode of life, habits, dress, and lack of physical exercise, as followed by countless generations of women, has resulted in a type which is deficient in muscular power, nerve force, and proper osseous development. Consequently the stamina, muscular and nerve force, required to stand the strain of child-bearing, is lacking, just as it would be in any serious acute illness. While a high state of civilization has resulted in many unavoidable obstetrical complications with their sequelæ, it is unfortunately true that bad obstetrics is also responsible for a large number of the complaints to which women are especially susceptible.

It is not difficult to find convincing illustrations of this statement, if we but trace back a few cases of common gynecological disease. For instance, what is more common than a retrodisplacement of the uterus? In the vast majority of cases, this condition has followed a labor or an abortion. There has been an arrest of the process of involution from a tear of the cervix, from abandoning the recumbent posture too soon, or from retained products of conception. The woman gets up with a large heavy uterus, and relaxed, loose, uterine ligaments, for we must remember that the subinvolution affects the supports as well as the uterus. The necessary result is a falling over backward of the heavy womb, which the slack ligaments are unable to support. The unnatural position of the uterus causing a more or less twisting of the broad ligaments, and a consequent kinking or obstruction of the collapsible veins carrying the blood away from the uterus results in a venous congestion of that organ, which means, of course, an engorgement of the blood vessels of the endometrium. Thus, congestion of the utricular and Nabothian glands, situated in the endometrium, causes them to work "over-time," as it were, and we have a resultant excess

of secretion pouring from the uterus, which we call leucorrhea. The constant venous engorgement favors a rapid proliferation of epithelium and the connective tissue elements, and we have the resultant changes, which we speak of as endometritis, the usual accompaniment of retrodisplacement. The leucorrhea, backache, menorrhagia, headache, so common in these cases, then, may be laid to the door of the physician, who perhaps was in a hurry, and ruptured the cervix in his haste, or was careless in allowing his patient to get up and go about before he had made certain by a final examination that the uterus had involuted properly and was in position, or he may have neglected to examine the placenta carefully to be certain that none of it was left behind.

In this day, lack of asepsis in obstetrics would be considered a crime by all, but as recent investigations show us how extremely difficult, if not impossible, it is for us to absolutely sterilize the external genitals, we are made to realize how careful we must be to take every precaution; and it should be remembered that carelessness here may result in sepsis, not necessarily a virulent one with grave danger to life, but one sufficient to sow the seeds of future trouble in the way of salpingitis and pelvic adhesions, with all their consequences.

When we realize the danger that lurks within the folds of the vulva, we hesitate to make unnecessary and repeated vaginal examinations during a labor, and we learn to rely more and more upon diagnosis by abdominal palpation. It would seem superfluous to reiterate the cardinal rule in the use of forceps, that we must imitate Nature to the fullest extent throughout the operation. Yet, how common it is, when the forceps are resorted to, for one blade to be slipped on to the head through a cervix one-third dilated, likewise the other, and then when they are adjusted, both locked together, are pulled through the undilated cervix which, while ample for the passage of the blades separately, is totally inadequate for both, the operator having totally forgotten that if he intends to imitate Nature, he must complete the first stage of labor before commencing the second.

Abortion, as an etiological factor in uterine disease, is a subject of great importance, in my opinion,² and I wish to dwell especially upon it as a cause of disease, and the results of the different methods of treatment.

Lusk says that a mismanaged abortion takes precedence over all other causes of uterine disease. Palmer Findley, in his recent work on Gynecological Diagnosis, states that subinvolution of the uterus, the result of postabortal infection, he believes to be the most prolific source of pelvic disorders. Numerous other authorities could be quoted in the same vein.

I believe that the subject of abortion and its management does not receive proper consideration, as a rule, from the profession at large, and that the frequency of the serious results that may

¹ The Post Graduate, April, 1900.

² The Post-Graduate, March, 1904.

follow are not fully appreciated. The difference of opinion as to the correct way to manage this condition unfortunately results in an imperfect conception of the subject and what should be accomplished by the treatment.

The great frequency of abortion is not disputable. Conservative estimates show that every fifth or sixth pregnancy ends in abortion among private patients, and this would be increased if it were possible to estimate the early cases. It is necessary to give a few moments of thought to the anatomical and histological conditions that exist in the uterus during the early weeks of pregnancy, and then to study the mechanism of abortion, to enable one to appreciate the factors which go to produce a condition of the uterus which predisposes to subsequent diseases. The ovum lies embedded in the decidua, which is the hypertrophied mucous membrane lining the uterine cavity. This hypertrophied mucosa begins to grow up around the ovum, until it has entirely covered it in. This reflected tissue is called the decidua reflexa. That portion of the decidua lying between the uterus and the ovum is known as the decidua serotina, whereas the hypertrophied endometrium lining the uterus and surrounding the ovum contained in the reflexa is the decidua vera. This decidua grows gradually thicker and thicker, until at the end of the third month it has reached its maximum of about half an inch. From this time the placenta is formed as a distinct organ, and a clinical difference in an abortion before and after its formation is observed.

Studies of the mechanism of abortion prove that it is very rare for the intact ovum to be expelled from the uterus with the decidua complete. In spite of the apparent completeness of the abortion, it is almost always possible to bring away pieces of the adherent decidua with the curette. The ordinary mechanism is for the fetus, or the ovum with the chorion, to burst through the reflexa and to be expelled, leaving the decidua vera, reflexa, and serotina to come away piecemeal later. After the third month, when the placenta has been formed, it is partially or completely adherent, therefore it is very prone to be retained, and its expulsion may be prolonged for weeks, and even months, unless removed by artificial means. Numerous cases of prolonged abortion have been published in the literature. Edgar gives the average duration as from twenty-four to thirty-six hours, therefore slow abortion is the rule, generally it is a slower process than a full term labor.

The weak uterine contractions of the as yet undeveloped uterine muscle fibers, the undue resistance of the unsoftened cervix, and the slow detachment of the adherent placenta, readily account for the slowness of the process. Berry Hart has studied the mechanism of abortion, by the examination of a number of uteri in the various stages of this condition, and he states that it is extremely difficult to decide whether an abor-

tion is complete or not by the examination of the expelled fruit sac. Sometimes the ovum does not burst through the decidua reflexa, but is expelled enveloped in this decidual covering, the reflexa with the ovum having broken away from the serotina. Thus the entire decidua vera and serotina still remain in the uterus, lining its cavity, while an inspection of the oval sac covered with the decidua reflexa, with the amnion below this, and the fetus and liquor amnii inside, leads one to believe that the abortion has been complete. On the testimony of the foremost authorities, therefore, we must accept the fact that the decidua vera almost invariably remains in the uterus in the earlier months, to be expelled after everything else has been discharged. It may be compared to the skin of an unripe orange; it will not peel readily, and shreds and pieces are left behind, adhering to the uterine walls. In 176 cases of abortion, in the service of the Society of the Lying-in Hospital of New York, only 14 were considered as complete.

Joseph Tabor Johnson has summarized the condition present in an abortion tersely and accurately, as follows: "The occurrence of abortion takes the uterus at a disadvantage. It is immature, it is not ready to expel its contents, its contracting powers are not developed, and its contractions are imperfect after, as well as before, the act. The membranes are especially adherent, and frequently, if not always, some portion of them is retained after the premature expulsion of the embryo."

In view of the above, it seems to me beyond dispute that we must consider abortion as a pathological process; and if regarded in this light, it is not difficult to appreciate it as an etiological factor in uterine disease.

The retained remnants, from delay in their expulsion, become liable to putrefaction, and a localized sepsis is developed, which may extend to the tubes and pelvic peritoneum, causing salpingitis and adhesions. If the parametria are invaded by ways of the lymphatics, cellulitis will result. Endometritis and metritis are, of course, a frequent sequel. But the condition that I believe is responsible for the greatest number of subsequent troubles, is the subinvolution that is more prone to follow abortion than labor, although I think we are more apt to associate it with the latter.

It is insidious in its beginnings, and the resulting diseases develop slowly; therefore its importance is overlooked, as compared to the more acute disturbances associated with sepsis. The fact that the subinvolution is not confined to the uterus alone, but also involves the ligaments, its supports, should not be lost sight of. Consequently, an enlarged and heavy uterus, with relaxed and slack ligaments, will gravitate to a position of retroversion and prolapse, and the inevitable venous congestion will follow.

The absence of lactation, Nature's ally in favoring involution, and the usual too early abandon-

ment of the recumbent posture, aid in the arrest of the proper involution of the parts. Fränkel and Küstner have demonstrated that fibroids and fibrinous polypi frequently develop from adherent bits of decidua or placenta, by finding chorionic villi in the midst of such growths. The so-called decidioma malignum is supposed by some to rise from decidual cells, or fetal relics.

The complications we have to consider, in dealing with a case of inevitable abortion, are the immediate dangers of hemorrhage and sepsis, and the remote results which we have enumerated above. The latter are very commonly lost sight of, in the efforts to combat the more apparent ones. Surely, we have not fulfilled our duty to our patient, if, though saving her from hemorrhage or sepsis, we leave her in a condition to develop a state of chronic invalidism.

The indications, then, to meet this problem are clear. The hemorrhage should be stopped at once, or else the woman will become anemic, and lose her resisting powers to sepsis. The entire contents of the uterus should be evacuated as soon as possible, for this material has now become a foreign body, it is prone to putrefaction. And, finally, the uterus should be left in a state of firm contraction, and in a condition favorable to the normal process of involution, which should be completed before the patient passes from our care.

We find that to accomplish the above requirements, two general methods of treatment are in vogue. There is, first, the so-called conservative plan of expectant treatment, with which you are all familiar, and which is probably followed by 90 per cent. of the profession at large. This method, which allows the uterus to empty itself and complete the abortion, if rational, must presume that the process is a physiological one, and that the uterus is competent to accomplish the evacuation without injury to the parts. That the uterus frequently fails to perform this work satisfactorily, I have endeavored to show. Therefore, I believe that the usual manner of handling an inevitable abortion is not based on sound logic, but that the method of treatment which is based on the theory that abortion is a pathological process, and not a physiological one, is a more rational procedure. This is the surgical method of radical intervention, so soon as the diagnosis of inevitable abortion has been made. While I previously stated that probably 90 per cent. of the general profession employ the expectant method, we find that among specialists opinions as to which is proper are about equally divided. In France and England, the expectant plan is almost universally employed. In Germany, the majority lean to the radical method; while in this country, authorities are greatly divided.

The gist of the argument in favor of the radical method, is contained in the studies made by Klein, on the process of involution of the decidua after abortion, and labor at full term. He states that after abortion the decidua vera remains wholly,

or in part, in the uterus, and that the decidual cells die *in loco* by necrosis. This necrotic tissue is gradually expelled, and a new growth of epithelium springs up from below, all of which takes about six weeks. After a labor at term, fatty degeneration of the decidual cells occurs, forming a distinct line of separation in the deep layer of the vera, so that at labor, the placenta and all the membranes are expelled complete at once. Herein lies the argument in favor of treating the pathological condition present in an abortion in a radical manner, assisting Nature to get rid of the decidua, which she is not prepared to do at this early period, as she would be at term.

The expectant plan of treatment, it is not necessary for me to detail, other than to mention that while Nature is expelling the contents of the uterus, a tamponade of the cervix and vagina is employed to prevent hemorrhage, and favor the separation of the ovum. This is usually removed every eight or ten hours, and antiseptic vaginal douches given until the ovum is expelled. Should the hemorrhage gradually cease, or diminish after several days, the case is considered cured and discharged. If the hemorrhage persists in being profuse for a number of days, or a rise of temperature indicates septic absorption, an intrauterine douche is probable given, and if this fails, the patient is ultimately submitted to a curettage, often several weeks after the onset of the abortion. The frequent results accompanying this expectant treatment are a prolongation of the hemorrhage, due to the inability of the uterus to contract firmly while its cavity is but partially emptied, thus inducing anemia and lowered resistance. Remnants of the gestation retained in utero, being cut off from their blood supply, become necrotic and septic from the invasion of saprophytes, and the patient begins to show signs of septic absorption with resultant debility, and she arises from her bed with the seeds of uterine and pelvic disease sown on fruitful soil.

The radical method is, briefly, to empty the uterus in a surgical manner, with finger or instrument, at once, under anesthesia, and with all aseptic precautions. The uterus is then curetted, with a sharp curette, and packed with gauze, leaving it perfectly clean and in a state of contraction. The importance of proper and sufficient rest during the convalescence, and a careful supervision of the process of involution, are here as important as after a labor at term.

The principal arguments advanced against this plan of treatment, are the danger of infecting the uterus by lack of aseptic technic, the danger of perforation, and the necessity of an anesthetic.

As to the first and second objections, the Medical Report of the Society of the Lying-in Hospital of 1897 shows 317 cases of abortion treated by the radical method, by about 150 different operators, who were internes (that is, mostly undergraduates taking their obstetrical training at that institution), with no deaths and no perforations. It is certainly true that in incompetent hands,

some cases may be infected by imperfect technic, but the manifest advantages of no hemorrhage, with subsequent anemia, no subinvolution with its long train of complications, no septic absorption from retention of gestation products, in addition to the avoidance of pain, worry and loss of time, which the large majority of patients treated radically will enjoy, greatly outweighs this disadvantage.

Often when the expectant plan is followed, curettage has to be resorted to ultimately, and it is much safer for the inexperienced to curette the uterus in the beginning, than later, when the thinned and softened condition of the uterine walls, induced by sepsis, makes the danger of perforation much greater, and when the lowered resisting powers due to prolonged hemorrhage, makes infection more probable.

In my experience, patients are much less likely to object to the anesthetic while suffering from the pain and distress of the uterine contractions, than later. If used at the beginning, they regard it as part of the miscarriage, while later they feel something is wrong, and have all the dread of an operation.

In labor, we do a manual extraction for a retained placenta, if Credé and massage will not dislodge the secundines after an hour. Why should we differ in handling a retained placenta or membranes after an abortion? By the immediate employment of the operative treatment, we arrest the hemorrhage at once, prevent sepsis by removing retained material that will decompose if left, and we insure a proper involution of the uterus and its ligaments, thus preventing subinvolution and its sequelæ. Future abortions are also prevented, likewise anemia, and a prolonged convalescence, thus saving the patient much pain, worry and loss of time. In view of the very close relation that abortion bears to uterine disease, I believe we should treat it on the same sound principles that we treat hemorrhage and the prevention of sepsis generally.

Prophylaxis in gynecology, then, is largely dependent upon the proper conduct of a labor or an abortion. Disregard of the importance of ante-partum examination, and the cultivation of diagnosis by abdominal palpation, thus reducing the amount of vaginal manipulation during labor; the too ready resort to the forceps and their unskillful use, especially in regard to their application through an undilated cervix, the lack of inquiry as to whether the uterus has involuted properly during the puerperium, the neglect to immediately repair injuries to the pelvic floor, the failure to recognize the importance of gonorrhea in its earlier manifestations, and in my belief, the popular method of treating abortion,—are all common factors that go to make gynecology a specialty.

I have not attempted to cover the field of prophylaxis. Such an effort would be more than could be encompassed within the limits of this paper. I have but endeavored to dwell upon some

of the most frequent causes of uterine disease, especially as they affect the physician in general practice. In the vernacular of the day, "it is up to" the man who has the care of these patients during puberty, pregnancy, and in the minor disorders of the genital organs, to realize his responsibility, and to appreciate how carefulness or carelessness in his treatment of these cases, may be directly responsible for the future health and happiness of those who have entrusted themselves to his care.

REMARKS ON TREATMENT OF FULMINATING APPENDICITIS.¹

BY J. M. INGE, M.D.,
OF DENTON, TEXAS.

SUCCESSFULLY to handle or treat a septic peritonitis in the presence of streptococci and other of the most virulent germs due to a local infection is the purpose of the physician or surgeon, dealing with a case of fulminating appendicitis.

To interfere with, to stop short the invasion of the peritoneal cavity by this deadly enemy; whether by removing the local habitat and environments at once, or by giving to the leucocytes and omentum helpful management so that a substantial wall will result from the work of the leucocytes aided by the intelligent management or help of the physician, is the problem at issue, a problem discussed not only by those of us who are in the ranks and obscure, but by the leaders, who, by their skill as practical surgeons and experienced clinicians have acquired the right to speak with authority. It would be well if something could be done to dissuade surgeons, especially inexperienced and unskillful operators, from handling such cases in an operative way in the presence of an abundance of virulent toxins disseminating infection and making a fruitful soil for absorption of toxins.

That such mistakes are not confined to the work of obscure surgeons, the writer is well assured. Within the last few months, one of the most famous surgeons in all the south spent 2½ hours manipulating the structures in the right iliac fossa, breaking up adhesions and making dissections to terminate a thorough radical operation in the presence of pus, which he did upon apparently one of the most promising subjects ever placed upon a table, with a fatal termination in a few hours. There is no doubt that skill is an important factor in successfully handling operative cases of appendicitis in a more marked degree than in any other work coming within the sphere of the average practical surgeon.

As we are dealing with the subject of a disease important from the standpoint of its great prevalence and large per cent. of fatality when not properly managed, and one that belongs to the work of every general practitioner and surgeon, suggestions made to each other born of our own observation and practical experience, will not go

¹ Read at Paris meeting of The North Texas Medical Association, December, 1904.

amiss. I will mention only to approve the method of operating within a few hours while the infection is confined to the appendix, and when too late for an early operation, waiting for more favorable conditions, which, through the management of the competent modern surgeon, will almost invariably come about, although by the older methods of only a few years past, such cases resulted in a large per cent. of fatalities.

The Ochsner treatment, beginning with stomach lavage, followed by quietude, and leaving off all nutrient, even fluids by the stomach, to prevent peristaltic action, so that localization of the infected area through adhesion of the omentum, would result, and protect the peritoneal cavity, marked an important advance in the successful treatment of fulminating appendicitis.

The question has often occurred to me: "What else can be added to the Ochsner methods to prevent peritoneal infection in such cases?" We well know that the infected material, whether serum or pus, will find its way along the line of least resistance, and that lymph exudation with adhesions occurs rapidly, soon affording ample protection to the main serous cavity if given an opportunity to do so, by controlling the infected material, whether by localizing it, or, better, by giving it an opportunity to escape elsewhere than into the peritoneal cavity, if this can be done without furnishing a soil fruitful for absorption of toxins. This we can do by the following method: If we have a case developing rapidly too late for an early operation, too early for a late operation, the mass or tumor, due to adhesions, easily felt by palpation, we adopt the course given by Ochsner to localize the infection. In addition, drain by a small stab wound, through abdominal muscles, transversalis fascia and peritoneum to the mass of adhesions. If pus escapes, use only a narrow strip of rubber tissue as suggested by Robert Morris, not wider than a pencil, if no pus, only serum, a small, loosely rolled gauze-wick surrounded by rubber tissue, not larger than a pencil. If there is no suppurative condition yet, pus may escape in a few hours. Whether pus or only serum escapes in small quantity at first, the capillarity is such that the flow of the infected material will certainly and promptly start in the direction of the drain and escape externally. Tissue pressure will force it along the line of least resistance, more especially so in cases of appendicitis where the muscles contract and are constantly rigid, much more so than in cases of salpingitis and ovaritis and other intra-abdominal inflammations; such drains will draw quarts of fluids from the abdominal cavity by capillarity.

Dr. Robert Morris says such a drain forces opposed peritoneal planes at a distance to act by capillarity from all parts of the abdominal cavity toward the point at which the greatest capillary power is being exerted. This brings about a condition followed at once by the work of the leucocytes, giving ample protection to the main cavity by building a substantial wall. With the course suggested added to the Ochsner method,

which generally succeeds in localizing the infection, many are walking up and down the earth to-day, who would be resting in the cemetery by the old methods of incision and removing the appendix under all conditions. By the Ochsner treatment, we have, though incysted, often large pus cavities, by adding the drainage early, we have no accumulation and the condition of the patient is certainly safer if we prevent pus accumulation so near the peritoneal cavity. As evidence that drainage without even a foreign substance or drainage material will accomplish the purpose suggested, I give a case in point: I was called in consultation to a young man suffering from the second attack. The tumor was well marked at McBurney's point; pulse, temperature and pain and rigid abdominal muscles and restlessness gave evidence of an active condition and decided infection, too late for an early operation. Besides, his father objected to the knife. He agreed, however, that I should introduce a hollow needle or small trocar, not larger than a slate pencil, which I did, following in the track of same with one of the size of a lead pencil, covering the puncture with moist aseptic gauze, there was no escape of pus.

I said to the attending physician, I confidently expect good results from this light operation, as I had some experience in similar cases with the same treatment. He telephoned me next day that a small quantity of serum was escaping, mixed with a few pus globules, and that the tenderness on pressure was not nearly so marked. The patient's general symptoms were much improved, including the absence of pain, which I attributed to turning the tide of infection out, cutting short invasion of the serous cavity, rapid lymph exudation as the result and the leucocytes getting in their good work. A free flow of pus soon followed, and when we were assured there was a firm wall, I made an incision with the scalpel for the escape of any tissue loosened by sloughing that might chance to be present. The case terminated without any untoward symptom. Rather than go into detail, I will only mention that in the treatment of as many as ten similar cases after the same manner, the results were alike favorable. Until a comparatively recent date, I held with those of the consensus of opinion of the profession that practically all cases of suppurative peritonitis terminated fatally, but by skilful and judicious management we have a good per cent. of recoveries.

Dr. Murphy, of Chicago, reports sixteen such cases operated on by himself with only one fatality. He places a rubber drainage tube in the rectovesical fold, places the patient in a semi-sitting position, uses no irrigation, which in the opinion of the essayist, has been quite a factor in the past in adding to the mortality list. No gauze packing, no sponging. Dr. Murphy further wisely remarks: "Pus retained under pressure rapidly absorbs, whether in the peritoneal cavity or elsewhere, and to stop absorption, all that is necessary is to relieve the tension."

I submit a brief report of a case coming under the head of the class in which Dr. Deaver says,

operation is contra-indicated. I was called to a young man, about twenty years old, with diffuse peritonitis, abdomen distended, temperature high, pulse very rapid, with what is called a leaky skin tenderness diffuse over the entire abdominal wall. It seemed he had approached near that condition known as collapse. I declined to operate. But having explained the condition to the anxious father, and finding that he rather preferred that I make an incision for drainage, I proceeded, making an incision about three-quarters of an inch in length, followed by a free flow of pus. I stopped short further manipulation, not even to the introduction of drainage material, on account of a very weak heart. Before leaving the country home of the patient, we placed him in a semi-sitting position. I received report from his attending physician, the second day, that his condition was much improved. He made a tedious but uninterrupted recovery, with no sign of ventral hernia.

GONORRHEAL ARTHRITIS.¹

BY HENRY W. FRAUENTHAL, M.D.,
OF NEW YORK.

In bringing the subject of gonorrhreal arthritis before you this evening I do so with the hope of determining, through the discussion, such points in differential diagnosis as your personal experience might regard as valuable, and the best methods of modern treatment.

Gonorrhreal arthritis, an inflammation of one or more joints due to the invasion of gonococci, was recognized as a complication of gonorrhea first by Petrus Forestus in 1507, and later by Musgrave in 1703; also by Hunter, Astley Cooper, Brodie, Bonnet, Foucart, Swediaur, and other early investigators. Eagle, in 1836, regarded arthritis as due to the use of copaiba. Brandes, in 1854, by means of his articles, brought the subject to the notice of the profession in general. The discovery of the pathogenic micro-organism of gonorrhea by Neisser in 1879, may be regarded as the landmark in the investigation of gonorrhreal arthritis.

After Bochart by the cultivation of the gonococci, and by reinoculation of the infection, showed it to be the cause of gonorrhea, various observers successfully isolated gonococci from the exudate in the joints and proved the correctness of their diagnosis.

Still, the absence of the gonococci is no proof that the arthritis is not gonorrhreal, as the micro-organism may have disappeared.

Petrone, in 1883, found it in the joint obturator cases and in the blood of one (*Centrales de la Chirurgie*, 1883, No. 7).

König recognizes four varieties of gonorrhreal arthritis: the hydrops articularis, the hydrops articularis, with serofibrinous and catarrhal exudate, the empyema of joints, and the phlegmonous joints.

In hydrops articularis, which is regarded as the mildest, there is but a slight alteration in the structure of the synovial membrane, and the joint cavity is more or less distended with a clear synovial fluid. In hydrops articularis with a sero-fibrinous and catarrhal exudate, the pathological changes of the synovial membrane are more pronounced, the synovial fluid contains flocculent masses and there is a greater tendency of ankylosis. The third variety—the so-called empyema of the joint, which is more severe in type though less common, is the result of mixed infection of pyogenic organisms, as well as the gonorrhreal, and is characterized by a puriform collection in the joint. The fourth variety, the phlegmonous, is the one that works the greatest ravages upon the joint structures, and is followed therefore by the greatest functional disturbances. Here there is disintegration and erosion of the articular cartilages, and infiltration and thickening of the other articular structures of the joint.

The preceding paragraphs chiefly describe the lesions with which we have to deal, and which must act as a guide in differentiating in our treatment.

Gonorrhreal arthritis occurs as a complication of urethritis in from two to seven per cent. of the cases, according to various observers.

After reviewing the literature in about three thousand cases, I find that the statistics on symptomatology of cases reported by Dr. W. P. Norrthrop¹ of this city conform to those of other observers, with such exceptions as I have noted hereafter.

Sex.—Male, 230; female, 22.

Exceptions.—Bennecke's, male, 18; female, 38. Anvergnoli,² females, 111 cases. Davis Colley³ claims it occurs as often in women as in men.

Age.—Ten to fifty years. Majority, twenty to thirty years equals 60 per cent. of 252 cases.

Dr. James Stewart, of Montreal, in his series of 48 cases (*Montreal Medical Journal*, 1890), reports a case at the age of sixty-nine years.

As to the frequency of gonorrhreal arthritis in children, Dr. Kimball reports in the *Medical Record* of November, 1903: Out of 600 children admitted to the Babies' Hospital in one year, 70 had gonorrhea, 10 developed arthritis. Quoting from the above article, Dr. Kimball says: "Gonorrhea prevails among infants and children to an extent not fully appreciated by the medical profession at large, and has become a common epidemic in institutions where a number of children are placed together."

In this series of 252 cases, the knee was affected in 97, which corresponds to the experience of all observers, the knee being the joint most often affected. In 75 of these 97 cases the knee joint was involved showing that this was the joint regarded as a monarticular disease.

¹ Medical and Surgical Report of the Presbyterian Hospital, New York City, Volume I, page 16. ² See Vol. V, page 5. ³ De la monarquie blanche dans les malades de 1890, page 267. ⁴ See Vol. VI, page 11. ⁵ See Vol. VII, page 11.

¹ Read before Section of Orthopedic Surgery, New York Academy of Medicine, December 10, 1904. ² 1881. ³ 1881. ⁴ 1881. ⁵ 1881.

As to the pain and tenderness in this affliction, 59 out of 193 cases are reported as severe. This is not in accordance with the literature on the subject, but in my own experience the pain seems more intense and continues longer than in any other form of arthritis, being more severe at night. The temperature varies from normal to 105° F., but is most frequently between 99° and 102° F. It is higher in children than in adults. The arthritis begins in some cases before the end of the first week, but generally after this, and lasts from two weeks to several months.

Of the various complications those of the eyes are most common. No doubt many cases of endocarditis and other complications are lost sight of by patients passing into the hands of other observers.

In making a prognosis in gonorrhreal arthritis, we have the local condition and the constitutional infection to consider.

To illustrate this point I wish to cite two fatal cases that came under my personal observation, which demonstrate that the primary cause of various constitutional disturbances is often lost sight of in making a diagnosis.

Case I.—Male, thirty-seven years of age, a merchant, unmarried, gave a history of several attacks of gonorrhea, which he arrested with a favorite prescription. He consulted me on June 20, 1896, for an inflamed elbow-joint, which was acutely painful. I applied a removable plaster splint, used inunctions of Credé ointment and baked for twenty minutes in a dry air bath. Salol, quinine and iron were given internally. The arm was restored to normal function in three weeks. The end of August he consulted me about a trip to the Adirondacks for the benefit of his cough which he had had for several weeks and had been doctoring himself with proprietary mixtures. He remained three weeks at Saranac and on returning, although improved in appearance, he still retained his dry cough. After an examination, I made a diagnosis of endocarditis and stated to the patient that if it was due to gonorrhreal infection, the prognosis was very serious.

During the winter and spring, he was treated by the writer and other physicians for his cough, temperature and night-sweats. In July he went to a summer resort on the coast, and had an attack of diarrhea. The doctor who was called in made a diagnosis of typhoid fever from dry cough, temperature and night-sweats. He remained in bed, under the care of nurses, for seven weeks. The symptoms remained the same, with the exception of the arrest of his diarrhea.

On returning to the city another physician was called, as he had expectorated some blood and looked emaciated. A diagnosis of miliary tuberculosis was made on the above symptoms and temperature, cough and night-sweats. Later, as some hemorrhagic spots appeared under his skin, the family requested me to see him again with the attending physician, but wishing to have my original diagnosis confirmed, I requested the family

to call in consultation Drs. Janeway and Delafield. This was done and a diagnosis of septic endocarditis made. He died three weeks later.

I am of the opinion that this was undoubtedly a case of gonorrhreal endocarditis, with the possible later invasion of other bacteria.

Case II.—Male, single, aged twenty-three years; merchant; having acquired gonorrhea during August, 1894; consulted a physician, but as his discharge did not disappear as rapidly as he desired, he used a very strong injection given him by a drug clerk. The discharge was arrested in twenty-four hours. Two days later, September 6, he called at my office with his wrist and hand swollen, temperature 102.5° F., and looking very ill. The hand was placed in a removable plaster splint, inunctions of Credé ointment applied. Salol, carbonate of guaiacol and quinine given internally. I baked his hand daily at 250° F. for twenty minutes and applied the ointment. At the end of three weeks the hand was normal in size and function. In October he developed a dry cough which I treated during the winter, and in January made a diagnosis of endocarditis. He had very little temperature, but occasional night-sweats.

In May his father consulted me on the advisability of sending him to the Adirondacks. I then told the father the true nature of his son's trouble and advised him to be taken to Long Branch with the family and placed in charge of Dr. Andrew H. Smith, in whose care he remained for the summer. His health failed and Dr. Smith and others giving an unfavorable prognosis, a prominent homeopathic physician was called who promised a cure. He was confined to his bed from December 1 until January 4, 1896, when he died.

This was also a septic endocarditis of gonorrhreal origin.

Thayer,¹ Berg,² Siegheim,³ Weichselbaum,⁴ Desnos,⁴ Schedly⁴ and Fleury⁴ have reported autopsies of gonorrhreal endocarditis cases.

In considering the treatment of gonorrhreal arthritis we recognize that the discharge from the genitals, or source of infection must be first arrested, to insure a quick result in the relief of the arthritis.

The internal use of the following drugs, (methylene blue, bal. copaiba, cubeb, oil sandalwood, carbonate creosote, carbonate of guaiacol, urotropin, bichloride of mercury, calomel, etc.), and the local use of solutions (protargol, bichloride of mercury, nitrate of silver, permanganate of zinc or potassium, hydrogen peroxide, acetate of lead, sulph. of zinc or lead, hydrastis, etc.), in varying strengths, which seem to yield the best results in the hands of the operator can be used.

In referring to the treatment of joints, I will take them up separately, hoping thus to make it more practicable.

¹ Medical Record, 1897, page 497.

² Medical Record, 1899.

³ Deutsche med. Wochenschrift, 1897, May 13.

⁴ Wood Medical and Surgical Monograph, 1889, page 302.

Foot and Ankle.—Dr. L. Vernon Jones, in his article on gonorrhreal arthritis, speaks of one case of a young man traveling on the continent. He went to five different doctors in five different continental spas for his rheumatism, as he called it, of his feet and ankles. Not one of them inquired into the condition of his urethra and he, not thinking it worth while to mention it, came back, crippled and flatfooted for the rest of his life.

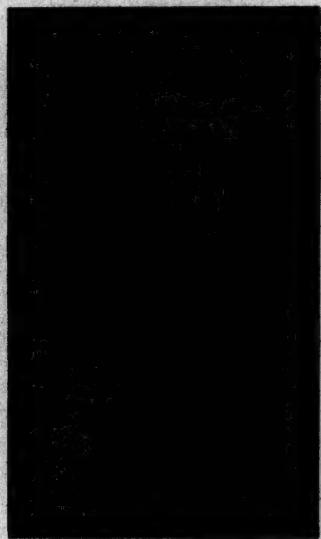
In gonorrhreal arthritis involving the joints and ligaments of the foot, if it is not recognized at once, the ligaments are softened, the arch of the foot breaks down and the patient is hopelessly and permanently flatfooted.

Properly to treat this condition, the foot should be placed in a plaster-of-Paris boot (running nearly to the knee), well supporting the arch of

Knee-joint.—In gonorrhreal arthritis of the knee, which is the joint most frequently affected, when the effusion is in the synovial sac we have reports by Willard,¹ Christen,² O'Conor, John,³ and other surgeons, of perfect results in function and the contour of the joint by free opening into the joint and irrigating with 1/5,000 bichloride of mercury or other antiseptic solutions.

In opening into the joint the skill and experience of the operator is a great factor, as death and ankylosis have followed this apparent simple surgical procedure.

All the cases seen by me have been in a subacute or chronic state, and, without giving the history of the cases in detail, I will speak of a method that has yielded good results in ankylosis and partial ankylosis of the knee-joint. The pa-



Splint devised for extension and counterextension in

chronic and phlegmonous knee-joints, by the author.

the foot. It may be split down the center to allow for swelling and for local treatment, but the patient should not be allowed to put any weight upon it, as the main object is to retain the relation of the bones and prevent stretching of the weakened tendon and ligaments.

In several cases seen at the Bellevue Orthopedic Clinic, with Dr. Sayre, and in cases in private practice, I have used this method of support with local application of blue ointment, heat and electricity, and, later, used a metal spring to sustain the arch if necessary. This treatment has given permanent relief.

I think this condition is sometimes regarded as *weak foot*, the origin of the trouble being overlooked.

Bond regards pain and tenderness in the heels in walking as pathognomonic of gonorrhreal arthritis.

tient's knee has been exposed to dry heat at 250° F. for twenty to thirty minutes in a Betz baker; when removed, Credé ointment is rubbed over the whole surface of the joint, following this with the pulsating form of the direct continuous electric current of five milliamperes for a period of from seven to ten minutes. After the galvanic current the ointment about the knee-joint is covered with oil silk and the leg encased in a movable plaster splint, or a knee traction splint. After this treatment of baking and electricity has been carried on for a week or more, massage and passive movement is added. In several cases treated by this particular method in the past four years, the patients have regained perfect function of the joint, after being ankylosed for from two months to three years.

¹ The Therapeutic Monthly, July, 1902.

² Thèse de Paris, 1893.

³ The Lancet, 1899.

In Hip Joint Diseases.—The pain is intense in the acute stages. I think that the following case, which has some points of interest, will cover my idea of the care and treatment of gonorrhreal arthritis of the hip.

Case III.—The patient, previous to my seeing him, had been seen by a prominent surgeon and an orthopedic surgeon, together with his family physician; owing to the intense pain and other symptoms a diagnosis of central myelitis of the upper third of the femur was made, and an amputation of the hip was decided upon. The patient refused to be operated upon and was made comfortable with large doses of morphine.

I saw him after the pain had subsided considerably, and I concluded his trouble was tuberculous. A Thomas splint was applied to keep the joint quiet, and, by means of a Buck's extension the joint was relieved, patient being confined to bed. Three weeks later he was placed on a long hip splint and permitted to go about. I learned on his first visit to the office through his history and urine examination, enough to make me regard his arthritis as gonorrhreal. An X-ray by Caldwell showed no bone lesion. After wearing the splint nine months it was removed and massage and passive movement begun. The patient regained nearly the normal function of the joint. During this time galvanic electricity was used; also salol and urotropin internally.

Dr. Arthur L. Clute,¹ in an article on osteoarthritis of the spine due to urethritis, etc., says, "the pain is referred to the distribution of certain nerves arising from the lumbar and sacral plexus and probably is due to the presence of an inflammatory exudate about the spinal articular processes, which exudate exerts pressure on the nerve roots as they pass out between the lamina." This inflammatory condition may extend the full length of the spinal column.

For treatment a plaster jacket or other fixation apparatus should be used. The high frequency current relieves these pains and the galvanic current and Credé ointment should be used to promote absorption.

Ricord, Bergh, Struppi and Loeb regard gonorrhreal arthritis as the result of posterior infection of the urethra. If this be the case, is it not possible that the general use of irrigation as a means of treating urethritis has increased the number of cases of posterior urethritis and secondly caused arthritis?

I am of the opinion that the use of all rheumatic remedies and restricted antirheumatic diet is injurious and contra-indicated.

In acute stage iodine should be painted over the joint, ice bags applied about the joint, a fixation splint to hold the joint immovable, with sufficient morphine internally to appease the pain. Cautery over the joint relieves the pain; also the high-frequency current. As a last resort, arthrotomy may be employed.

In the subacute and chronic stage the use of

¹ Boston Medical and Surgical Journal, November 24, 1904.

blue ointment, Credé ointment and liquid iodi comp., combined with the dry heat and galvanic electricity, as previously described, are of great value. All joints should be put at rest in plaster, as this makes the most easily applied and most perfect-fitting splint for all joints except the hip, which requires a Thomas or Sayre traction splint. In the phlegmonous joint, extension and counter-extension should be used. Further, I believe that urotropin, salol, carbonate of guaiacol, carbonate of creosote, quinine, are underestimated in their value for destroying gonococci found in the interior of the body.

Summarizing some of the characteristic symptoms of gonorrhreal arthritis, I would mention: the characteristic intense pain and its increased severity at night, the peculiar outline of the joint, as it is more often complicated with inflammation of the tendon sheaths and bursae than in articular rheumatism and other forms of arthritis. The arthritis being associated with some acute or chronic gonorrhreal infection. The leucocyte count may aid in differential diagnosis and X-rays showing the ligaments and tendons, are also of great value.

In conclusion, I wish to say that if the same zeal is displayed in seeking for gonococci as a cause of arthritis as there is in looking for uric acid and urates, possibly more cases of gonorrhreal arthritis will be found.

A CASE OF SUDDEN DEATH IN A NEWLY BORN INFANT DUE TO SUPRARENAL APOPLEXY.

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HEMORRHAGE into the suprarenals is a condition usually occurring during the first week of life; it has been clinically subdivided into three varieties by Dr. Still:

1. Those cases in which death occurs from within a few hours to a few days after birth.
2. Those cases in which death occurs after an acute illness of two or three days' duration, and usually accompanied by a purpuric or bullous eruption, and in which the suprarenal lesion appears to be part of the disease itself.
3. Those cases in which it appears to be a complication of some disease, as for example, pneumonia, diphtheria, thrush, etc.

Etiology.—The causation of suprarenal hemorrhage is not clearly understood even at the present date; among the causes which may be mentioned are, leucemia, a hemorrhagic diathesis, the complication of some acute illness, such as pneumonia, diphtheria, etc., venous circulatory disturbances, degeneration or inflammation of vessel walls, Addison's disease, traumatism.

The infant in question was one of twins, the labor being a very difficult one; the history of the case was as follows: Mrs. X., primipara, aged thirty years; occupation housework; native of United States; month of gestation, tenth; meas-

urements of the pelvis were normal; abdomen was very large. The labor pains commenced at 3 P.M., February 2; with the commencement of the labor pains the membranes ruptured; the labor pains were very feeble in character, and by 8 P.M. of the same day had disappeared completely; dilatation from this time on took place due to the weight of the feti, and by 8 A.M., Feb. 3, the patient was fully dilated; vaginal examination showed a breech presenting, with a rounded mass (the head of the second child) somewhat further up in the pelvis. The first child was delivered by breech extraction at 9 A.M., February 3; during delivery the heads interlocked, but after manipulation the child was safely delivered; the weight of this child was six pounds three ounces. Upon reexamination the presentation and position of the second child was determined to be L. O. A., the body of the child occupying an oblique position as obtained through the abdominal wall; the mother was left alone during the next three hours; during this entire time there were no signs of any labor pains, and as the mother was getting weak, the uterus gradually assuming a bell shape, the head not engaged, it was deemed advisable to extract the child manually; a version was attempted unsuccessfully, high forceps were applied and the child delivered 12 M. February 3. The child made no attempt at spontaneous respiration; artificial respiration was resorted to, and had to be maintained for about an hour and a half before respirations were fully restored; the placenta was safely delivered spontaneously about two minutes after the birth of this child; the weight of the second child was seven pounds six ounces. Both children were again seen that evening, and everything was progressing normally. The nurse said that both children were alive and doing well at 4 A.M. At 5 A.M., February 4, she noticed that the child which was born last had stopped breathing and was apparently dead; she also noticed that it had not died from obstruction of the respiratory tract, as the child's face was not in the least cyanotic.

Autopsy Report.—Body that of a newly born infant, twenty-one inches long, weight, seven pounds six ounces; rigor mortis present, some slight discoloration in region of left temple, pupils equal, dilated, abdomen distended. The lungs were distended with air, crackled with pressure; cut section shows color pale, except at the right upper lobe, which was slightly congested; sections of the lung thrown into water float readily; on examination of the bronchi they show a slight amount of mucous secretion. The muscle walls of the heart were slightly pale in color, both the auricles and the ventricles were completely empty of blood, the right ventricle was slightly distended, the left ventricle contracted, foramen ovale closed. The intestines were distended with gas, and upon later examination showed no hemorrhagic areas whatsoever. The regions occupied by the liver were as follows: The right hypochondrium, the epigastric, a portion of the

umbilical, and the left hypochondrium; the surface was mottled, colored; the capsule was smooth and showed a diffuse hemorrhagic discoloration beneath it; on section the liver showed a slight hemorrhagic discoloration, extending downward from the surface into the substance of the liver for about one-fourth of an inch; the lobules of the liver were easily seen, the blood-vessels were not distended, and the friability of the liver was normal. The spleen was normal. The right kidney showed no discolorations or changes whatever, being perfectly normal. The right suprarenal showed distinct hemorrhagic areas about the size of a dime beneath the capsule, one of these had raised the capsule; upon section a small amount of bloody fluid was discharged; the suprarenal structure in these areas was distinctly darker than that of the surrounding structures and of a bloody color, the consistency being greatly diminished as compared with that of the surrounding structures. The left suprarenal on its outer surface had an elevation of the capsule of about one quarter of an inch, the elevation being circular in outline, with a diameter of three quarters of an inch; upon section a quantity of fluid blood was discharged. The gland in this region showed an area of hemorrhagic discoloration, together with marked friability. Pancreas was normal. Meninges were somewhat congested, otherwise no change. Brain normal.

Microscopical Report of the Suprarenales.—There is a diffuse area of necrosis of the tissue substance of the suprarenales, involving both the cortical and the medullary regions, so that nearly all of this tissue had lost its characteristic appearance, together with a diffuse hemorrhagic infiltration throughout the glands of both sides. (For this microscopical report I am indebted to Dr. H. Oertel, who had taken considerable interest in this case.)

Dr. T. M. Prudden reports a case with sudden death at the fifth day; here, upon examination, was found an extensive hemorrhage about the right suprarenal gland, together with an infiltration of that gland, hemorrhagic in character. The kidney was normal. Northrup reports several cases, among which was one associated with incomplete septum ventriculosum, associated with thrush. Ganod and Drysdale report a case occurring at the fourth month. Anderson reports a case occurring at the fifteenth month, and this he thinks was due to an acute toxemia, probably infectious in character. Mater reports a case of suprarenal hemorrhage in the stillborn. Holt reports several cases, in one of which the capsule was distended nearly to the size of an orange.

Treatment of Cerebrospinal Meningitis.—In a timely article, H. LENHARTZ (*Münch. med. Woch.*, March 21, 1905) recommends daily lumbar puncture for cerebrospinal meningitis. The average amount to be removed should be 30 c.c. and should never exceed 50 c.c. A specially constructed manometer may be attached to the needle, and will avoid the withdrawal of too much fluid.

MEDICAL PROGRESS.

NEUROLOGY AND PSYCHIATRY.

Treatment of Purulent Cerebral Meningitis.—The question as to handling gunshot fractures of the skull is as yet debatable ground; some surgeons recommend expectant treatment, others insist on immediate surgical interference. It must be kept in mind that in many cases the extraction of the bullet is impossible, and débridement is not to be thought of, while there are surgeons who just on that score proceed with the enlargement of the wound so as to place it in as an aseptic condition as possible. APPZL (*Roussky Vrach*, January 15, 1905) reports the recovery of a man of eighteen years who, in an attempt at suicide, produced a fracture in the right frontal region of the skull over the right brow, the shape of a triangle with the apex turned in; another fracture was noticed at the point of the bullet's exit. Operation elicited a fracture of both tables, and six fragments of the bone were extracted, together with the bullet greatly changed in shape. The dura was ruptured in one place. It was split open and an iodoform tampon inserted throughout the entire length of the wound between the dura and the arachnoid. On the sixth day after the operation there was marked protrusion of the brain substance, and the tampon was saturated with the cerebrospinal fluid. The protruded part of the brain substance was found to contain a fragment of the bone. Patient discharged cured in the seventh week, though there was a considerable discharge of a mucopurulent nature before the wound healed. Opening of the skull covered over with an epithelial membrane, but pulsating. The author thinks that once meningitis becomes established and operative interference is considered desirable, it should be proceeded with at once. It is of great importance to avoid a shock to the brain by the use of concussing instruments, as it was shown conclusively that after trephining the skull by such instruments a local circumscribed purulent meningitis was converted into a diffuse meningitis.

Early Symptoms of Insular Sclerosis.—It is important that this rather neglected but too widely disseminated disease should be brought constantly before the observations of the general practitioner. E. HOMMERS (Lancet, February 18, 1905) states that there are three good reasons why insular sclerosis is of great importance from the general medical standpoint: (1) He says it is by a considerable margin commonest of all the chronic diseases of the central nervous system; (2) because owing to the great diversity of its symptoms it may come first in its early stages under the notice of any man whatever branch of medicine he may practice. (3) It is by no means easy to recognize in the early stages, being frequently confounded with hysteria. It is of the very greatest importance obviously to make the diagnosis as early as possible, in order, on the one hand, to save a patient suffering from a hopeless central nervous disease, from being treated as a good-for-nothing hysterical fool, and on the other, to prevent a truly hysterical case from lapsing into chronic invalidism. In the experience of the author, it is the first of these two events which more frequently happens. In the out-patients service of the writer the average frequency of cases of insular sclerosis has been about two per thousand. This is a higher rate in the same 5,000 cases observed, than was noted in paralysis agitans, locomotor, cerebral tumor and general paralysis. Many cases of insular sclerosis are missed. This is due to the fact that most of us were brought up on Charcot's

classical picture, which he separated with others from the neurological mud heap. In the opinion of the author, the majority of cases begin in one or two or three different ways. There may be weakness in the legs; there may be ocular symptoms as in tabes. In some cases these may antedate the other symptoms by as much as six years. There may be some form of loss of power or disturbance of sensation in almost any portion of the body. Menorrhagia may not infrequently be an early symptom. Tinnitus is also not an uncommon early sign. It becomes obvious therefore that there may be great difficulty in designating insular sclerosis from hysteria. Buzzard has pointed out the chief criterion from which this differential diagnosis must be made. He says: Until the typical symptoms make their appearance about which doubt has existed, I do not think we can as a rule safely pronounce the diagnosis as insular sclerosis. If, however, paresis has occurred in one or more limbs, with spontaneous recovery and repeated recurrence together with amblopia, my experience would lead me to diagnose insular sclerosis. Babinski's toe phenomenon has never been found present, except in insular sclerosis. The author concludes that the slower the onset of symptoms, the more hopeful is the prognosis as to remissions and the less likely is any given attack to be finally crippling to mind or body. The fact that the earliest symptoms are cerebral does not necessarily imply that these will be specially predominant later. In both the last cases, ocular symptoms came first, but the brain and upper cord are comparatively little affected, while the paraplegic symptoms have been prominent for some years.

Sensory and Motor Role of the Optic Thalamus.—The researches of W. v. BECHTEREW (*Monatsheft f. Psychiat. und Neurol.*, March, 1905) have shown that besides its sensory functions the optic thalamus comes into relation with motor phenomena in the body. This part of the brain is concerned in the production of the involuntary motions of expression and mimicry, as well as a long series of vegetative functions. This motor function of the thalamus is chiefly localized in its medial nucleus.

The Transmissibility of Tabes.—There are scant data concerned with the fecundity of tabetics, according to M. MILIAN (*Rev. Mens. des Mal. de L'Enf.*, March, 1905). It appears that their procreative power is diminished, the proportion of childless households among tabetics being very large. Since the same is true of syphilitics it is possible that such sterility may be the result of syphilis rather than of tabes. The same observation may apply to the great mortality of the children of tabetics. Most of the cases published of hereditary tabs are really cases of Friedreich's disease. There are undoubtedly cases of hereditary tabes, but their number is so small as to be negligible. The small proportion of cases of juvenile tabes, the issue of tabetic parents, when compared to the larger number of cases the issue of syphilitic parents, suggests that hereditary syphilis is the direct cause of juvenile tabes. A large proportion of the offspring of individuals affected with locomotor ataxia are affected with nervous disorders. Tabes cannot be blamed as being the cause of these, for heredo-syphilis creates the same predispositions and nervous accidents. Moreover, in tabetic households children born before the parent, or parents, have contracted syphilis and tabes have the same tendency to nervous disease.

Landry's Paralysis.—THEODORE DILLER and C. L. BILLARD (*Amer. Med.*, April 8, 1905) report two cases, one terminating in recovery the other in death. In the first case, that of a young man of seventeen, the main

features were rapidly ascending motor paralysis which involved the legs, trunk, arms, diaphragm, and which by the end of twenty-four hours was almost complete, with partial involvement of neck muscles; later tenderness in the calves and pains in the back, incontinence of urine; maximum of disease reached in four days; absence of fever or mental disturbance; beginning of subsidence of symptoms on the eighth day after onset and after the symptoms had been at their maximum for four days, followed by a steady and uninterrupted recovery. The muscles of the legs which were first paralyzed were latest in recovering power. The second case which terminated fatally is noteworthy because it was the patient's second attack of acute ascending paralysis, he having recovered from a similar although milder attack two years before. No facts of any significance were revealed in a search for the etiology of these attacks.

PEDIATRICS.

Acute Articular Rheumatism in Children.—Although comparatively rare in the child, SHENGALIDZE (*Rousky Vrach*, February 18, 1905) enumerates quite a goodly number of authors who reported cases of rheumatism in the very young. It is possible to admit that the disease is transmitted with the milk of the sick nurse. The incubation period in such cases is at least four days, the duration of the disease between two and four weeks; both the duration and the severity of the disease are less in infants as compared with adults. In the former it may run its course without any complications, while in older children endocardial and pericardial complications, as well as implication of the pleura and of the nervous system (chorea) are of frequent occurrence. This has been reported by Baudelocque, Rillet and Barthez and others. Picot found 50 per cent. of his cases complicated with pericarditis, while Roger asserts positively that every rheumatic child's heart is bound to be attacked sooner or later. The author observed in his case a rather rare complication in the form of an effusion with the maxillary joint.

Prodromal Rashes of Measles.—The varieties of these rashes may be as follows: (1) Isolated macules; (2) Blotchy erythema; (3) Isolated papules; (4) Urticaria; (5) Scarletina form rash; (6) Circinate erythema. J. D. ROLLESTON (*Brit. Med. Jour.*, February 4, 1905) states the general characteristics of prodromal rashes to be as follows: (1) They appear usually within the first two days of the disease. Frequently they precede the catarrhal symptoms, Koplik's spots and the characteristic stomatitis. Occasionally they may be seen before any rise of temperature. (2) The short lived existence of most of these rashes serves in part to account for the scanty attention they have received. Some indeed are less fugitive than others. Urticaria and blotchy erythema for example, lasting only a few hours, while the scarlatina from eruptions frequently persist for twenty-four hours. Even the scarlet fever-like rashes, which are more widely diffused than the rest, seldom occupy the same extent as the fully developed eruption of scarlet fever, to which they bear as a rule a faint and abortive resemblance. (4) The prodromal rashes of measles do not affect any special situation. (5) The appearance of several varieties of eruptions simultaneously is highly characteristic. Accidental eruptions are by no means unknown in the other acute exanthemata, but coexist or follow, instead of preceding the specific efflorescence. (6) The characteristic eruption in measles is occasionally attended with irritation. The prodromal eruption of measles is strikingly free from any symptoms of the kind. There is no pain

or pruritus, nor any subsequent desquamation. (7) Initial rashes in measles appear to be no aid in prognosis. The course of the disease in which they were noted in no way differ from that followed in the cases where they were absent. (8) The occurrence of rashes such as enumerated in an epidemic focus should alone arouse suspicion of infection and prompt examination of the buccal mucosa for Koplik's spots and the characteristic stomatitis followed by a close watch for catarrhal symptoms will enable the practitioner to be certain of an early diagnosis.

Lymph Node Tuberculosis during Childhood.—The question of the routes along which tuberculous invasion of the system may occur is still *sub judice*. The study of abundant clinical material at his disposal by F. HARRITZ (*Jour. of Infect. Dis.*, March 1, 1905) leads him to the conclusion that primary tuberculosis of lymph nodes is quite frequent in adults; that besides in the thorax tuberculosis is quite often primary in the abdomen and especially in the cervical nodes. Not seldom it is found generally distributed and it often extends from one place to another, during years or dozens of years, so that finally a great portion of the lymph node system has been attacked by tuberculosis. Tubercl bacilli may remain latent in the lymph nodes of children for a long time. The duration of latency may be placed at twenty to thirty years. The term latency is used so as to comprise both cases of well-encapsulated old tuberculous foci (virulent or non-virulent) in lymph nodes, and the not less important latent chronic affections of lymph nodes in which the tuberculosis has made its way from one place to another in the course of many years. As the result of his observations, the author concludes that in adults as well as children, pulmonary tuberculosis may be, and often is, secondary to tuberculous foci in other organs, mainly in the lymph nodes, and the infection of the lungs occurs most likely by way of the blood (from the thoracic nodes the infection might also easily occur through the lymphatics). He also believes that much more stress must be laid upon primary infection through the digestive tract, and not least on infection through the throat, than has been done formerly.

Congenital Lesions of the Diaphragm in Newborn Children.—Hernia of the diaphragm is not one of the rarities of medicine, according to A. MORI (*Brit. Jour. of Children's Dis.*, March, 1905), who reports three cases. The first case at autopsy showed in the left pleural cavity numerous coils of large and small intestine, not covered by peritoneum. The left lung was atrophic, and the heart was displaced to the right. The patient had died after a few feeble inspiratory movements. The second case died after a few vain efforts at respiration, and necropsy disclosed a wide fissure on the right side of the diaphragm, through which a portion of the right lobe of the liver and some coils of the large and small intestine had penetrated into the thorax and compassed the lungs. The third case was born in a condition of asphyxia and died after the usual means of overcoming this had been resorted to for half an hour. The left pleural cavity was found to be filled with coils of small intestine and transverse colon. In all these cases there was polyhydraminos and an enormous enlargement of the liver. The prevailing theory of the origin of diaphragmatic hernia is that it is the result of an incomplete closure of the diaphragm. The researches of the author, however, lead him to believe that this condition represents a lesion of the diaphragm consequent to increased intra-abdominal pressure, caused by a considerable increase in volume and weight of the liver. This enlargement

is the result of circulatory and parenchymatous alterations in that organ, frequently of syphilitic origin. An additional factor is an enormous development of the intestines, which may be filled with an accumulation of meconium. The fetal diaphragm is weak, formed of thin tracts of pleural and peritoneal serous membrane with interposed muscular fibers. Other contributing causes are the tendinous arch that gives passage to the aorta, the esophageal and inferior vena-caval aperture; and the sharp left lobe of the liver having a tendency to break through the diaphragm.

PATHOLOGY AND BACTERIOLOGY.

Cell-Inclusions in Variola.—The structures described by Bose and Councilman as protozoa, have been found in every case of smallpox studied by P. SCHRUMPF (*Virchow's Archiv.*, Vol. 179, No. 3). The pustula of variola is caused by the irregular proliferation of the epithelial cells of the stratum Malpighi, followed by central necrosis, the formation of fibrin, and invasion of cocci. A section vertical to the pustule will disclose three zones: proliferated cells, enlarged cells with vacuoles and indistinct borders, and lastly, a central network filled with disintegrated cells, fibrin, chromatin and cocci. In the external zone may be found the earliest (extranuclear) stage of the supposed parasite, which has been also described in vaccinia. The middle zone contains the more complicated, intranuclear manifestations, while the central zone is free. The extranuclear forms are usually small, round, oval or semilunar and surrounded by a lighter areola; they usually take the same stain as the chromatin granules of the nucleus. The resemblance to parasites with cell-body and nucleus is certainly very great, yet it is more plausible to regard them as dislodged portions of nuclear chromatin. The areola is certainly not an artifact, since it may also be observed in fresh specimens; it is probably due to vacuolization of the cell-protoplasm, secondary to retraction. Some chemical changes have probably taken place, since with specific stains these granules do not take the same hue as the nucleus. The varying shape, number and position of these inclusions give rise to the most manifold pictures, which have been erroneously interpreted as various stages in the development of the parasite. Other forms are no doubt derived from the protoplasm of the cell, since they stain like this. The intranuclear inclusions appear as dark-red or violet granules in the blue nucleus, sometimes with a light central area and quite regularly surrounded by an areola. Then formation is probably the same as with the extranuclear forms: The degenerated chromatin collects in large or small clumps, thus giving rise to a small vacuole filled with nuclear fluid. Similar structures have been found in the desquamated epithelial cells of the bladder, where no cystitis or urethritis was present. If the contents of a smallpox pustule be passed through a Chamberland filter, the filtrate will be just as virulent as before. The supposed parasites are, however, too large to pass through such a filter. Another fact that speaks against the parasitic theory is the absence of parasites or spores in the blood.

Parasitic Organisms in Tumors.—No matter how the so-called cancer parasites are interpreted, there can be no doubt that they occur most frequently in glandular carcinomata and hardly ever in other pathological conditions or in health. L. BLUM (*Virchow's Archiv.*, Vol. 179, No. 3) does not believe that they are really parasites, yet states that an explanation for their exclusive occurrence in carcinoma cannot yet be given. The material to be examined should be absolutely fresh, and special stains are necessary. There

is no relation between the number of inclusions and the malignancy of the growth, and the periphery, where one would expect to find most, if they were parasites, is usually free. The structure and shape are fairly constant, unlike the usual manifestations of cellular degeneration, yet the arguments which form the foundation of the parasitic theory are inadequate at this date to be convincing.

Protozoa of Scarlet Fever.—The recently discovered protozoa of scarlet fever may be easily demonstrated, according to C. W. DUVAL (*Virchow's Archiv.*, Vol. 179, No. 3) by irritating the skin for two to five minutes with a piece of cotton saturated with strong water of ammonia. After five to six more minutes, a vesicle will form, which under normal conditions will contain straw-colored serum without leucocytes or red blood-cells. In scarlet fever, however, the serum will show many structures which closely resemble the "cyclaster scarlatinalis" described by Mallory. The fact that they possess a definite structure, shape, and staining reaction, and that fifty or more may be found in a single drop of serum, makes it more than likely that they are not products of degeneration, but protozoa. A complete cycle may be traced, from small forms to rosettes and ameboid types. Degenerated bits of protoplasm may also be found in the serum, but differ considerably in appearance and staining. A certain similarity to the malarial plasmodium may often be found, in that the rosette breaks up into individual segments. The same structures were also found at autopsy in the skin.

PHYSIOLOGY.

Enterokinase and Trypsin.—An experimental investigation of the inter-relationship of these two substances has been conducted by W. M. BAYLISS and E. H. STARLING (*Jour. of Physiol.*, February 28, 1905). According to Pawlow enterokinase is a ferment, and acts on the trypsinogen in the pancreatic juice, converting this into a third substance, trypsin. This interaction has, however, been regarded by Délézene and Dastre as analogous to that which takes place between amoebceptor and complement, the action of the enterokinase being to link the trypsinogen on to the protein molecule. The authors' experiments are not favorable to this view. Normal rabbit's serum, besides its own antitryptic qualities, may sometimes possess the power of neutralizing or destroying enterokinase. This power when absent may be always evoked by the repeated injection of solutions of enterokinase either subcutaneously or intraperitoneally. The production of an "antikinase" in the serum does not increase the antitryptic powers of the latter. Injections of trypsinogen subcutaneously do not give rise to the production of any "antitrypsinogen" in the blood serum. The antitryptic qualities of blood serum are therefore not due to the presence of antikinase. There is no evidence to show that a solution of trypsin is equivalent to a combination of kinase and trypsinogen. Trypsin is a new substance, differing from trypsinogen, and produced from the latter by the ferment-like action of enterokinase. There is no evidence that the enterokinase is essential to or takes any part in the proteolytic activities of trypsin.

The Influence of the Thyroid on Autolysis.—That the thyroid gland has a marked influence on metabolism, is a doctrine which is firmly established in the knowledge of the physiology of the ductless glands. S. B. SCHRYVER (*Jour. of Physiol.*, February 28, 1905) studied the effect of the administration of thyroids upon the rate of autolysis of the tissues. He found that in every cat experimented upon in this way, the liver showed after twenty-

four hours an increased autolysis. The thyroid gland seems to exert a specific action on the proteids of the tissues. In comparing the effects of the administration of the thyroid with those of the administration of phosphorus, the author notes that in both cases there is a degradation of proteid matter. In the case of thyroid administration there is an elimination of fat, in that of phosphorus poisoning a fatty degeneration, or rather, a fatty infiltration. But with thyroid feeding there is increased oxidation, whereas in phosphorus poisoning the oxidation is diminished. These results might suggest that the proteid degradation is a preliminary process in the utilization of fat, and that, after elimination of certain nitrogenous groups, the fat wanders from the other tissues into the liver, a fatty side-chain replacing possibly a nitrogenous side-chain. In the case of thyroid feeding, with the accompanying excessive oxidation, the fat is burned up, whereas in the case of phosphorus poisoning, with its diminished oxidation, the fat accumulates and gives the organ the characteristic appearance of fatty degeneration.

The Action of Chloroform Upon the Blood-Vessels of the Bowel and Kidney—The action of chloroform in the blood in such quantities as may occur with the inhalation of one to three per cent. vapor is to directly paralyze the neuromuscular mechanism of the blood-vessels of the kidney and bowel, and that a considerable part of the fall in blood-pressure which is constantly associated with the administration of chloroform may be accounted for in this manner. This is the conclusion derived from the experiments of E. H. EMBLY and C. J. MARTIN (*Jour. of Physiol.*, February 28, 1905).

A Physicochemical Theory of Fertilization.—Starting out with the modern conception that protoplasm is a mixture of colloidal solutions, MARTIN H. FISCHER and W. OSWALD (*Pflüger's Archiv*, Feb. 1, 1905) believe that the process of fertilization may be explained by reference to the properties and behavior of colloidal solutions. The colloids exist in two forms: the so-called soluble state, or sols, and the insoluble state, or gels. The conditions of clotting, curdling and rigor belong to the latter state. The sols are substantially the same as suspensions. It has been found that the gels have a fibrillar structure in whose meshes a fluid is found. It is possible to change sols into gels by changing the relative positions of the suspended particles more particularly by a closer approximation of the particles, which form a fine network. On raising the temperature some sols are changed into gels, e.g., egg-albumin; other sols are changed into gels by lowering the temperature, e.g., gelatine. Some colloids can exist in the sol condition only within certain limits of concentration. Another method of transforming sols into gels is by the addition of small quantities of certain salts. The coagulating power of the latter depends upon the valency of their ions increasing as this increases. Acids and alkalies also transform sols into gels. Non-electrolytes such as alcohol, ether, and chloroform also have this power. Moreover, one colloid may coagulate another. By merely mechanically shaking certain colloids these are coagulated. The authors mention the following as being the different methods by which the ovum may be fertilized: (1) Natural fertilization (both egg and sperm necessary). (a) Normal egg and normal sperm; (b) normal egg and immature sperm; (c) non-nucleated egg and normal sperm; (d) polyspermia. (2) Parthenogenesis (egg without sperm). (a) So-called natural parthenogenesis, really associated with rise of temperature, freezing, drying, etc.; (b) artificial parthenogenesis, A by means of abstraction of water; osmotic fertilization by means

of electrolytes and non-electrolytes; B by means of specific chemical methods, such as salts, acids, alkalies, alcohol, ether, chloroform, alkaloids and colloids, etc.; C by changes of temperature; D by means of mechanical agitation, brushing, spraying, etc. Most definitions of fertilization are concerned merely with the morphological aspect of this process. Physiologically regarded, the spermatozoon is a substance which, in the first place, permits the development of the egg, and, in the second place, transfers to it the male characters. A few minutes after the head and neck of the spermatozoon have penetrated the ovum, a light spot appears in the large, from which spot the protoplasmic granules arrange themselves in radial lines. In the neighborhood of this spot is the head of the spermatozoon. This phenomenon of radiation is known as the astrosphere and is not an artifact. The formation of the astrosphere takes place also in the various cases of natural and artificial parthenogenesis. The conclusion drawn from these facts is that the formation of the astrosphere is the substantial morphological basis of fertilization. The authors find that with hardly a single exception all those agents that transform sols into gels are capable of bringing about fertilization of the egg. Natural as well as artificial parthenogenesis consists in the formation of an astrosphere by means of a transformation of hydrosols in the protoplasm into hydrogels.

The Synthesis of Uric Acid in the Organism.—It has been shown that various tissue extracts, particularly those of the liver and spleen, contain an oxidase capable of bringing about the conversion of hypoxanthin and xanthin into uric acid. R. BURIAU (*Hoppe-Seyler's Ztsch.*, Feb. 11, 1905) studied the action of this hypoxanthin oxidase with care, using extracts obtained from the liver of the ox. He found that in the absence of oxygen this conversion cannot take place. Uric acid may be formed from free or combined purin-bases present in the liver-extract. The latter also has the capacity of again decomposing the uric-acid that has been formed. Apart from this oxidative formation of uric acid in the liver, there is no other synthesis of this substance in the liver. The muscles also take a large share in the production of uric acid. During rest the muscles, by means of hypoxanthin-oxidase, change the stored-up hypoxanthin into uric acid and deliver it to the blood. Since one can never detect uric acid in the muscles, this conversion can only take place just as the hypoxanthin is passing from the muscle-fiber into the surrounding lymph. A part of the uric acid is again changed into hypoxanthin. The quantity of hypoxanthin in the muscle remains constant, in spite of the formation of uric acid; hence there is a constant formation of new hypoxanthin in the muscle. This production of hypoxanthin is increased while the muscle is at work. At the same time the amount of purin-bases leaving the muscle is also increased. The fact that hypoxanthin, under this condition, leaves the muscle without being changed into uric acid is probably explained by the fact that the xanthin-oxidase cannot act well on account of poverty of oxygen.

The Effect of Stimulating Two Areas of the Cerebrum.—By means of simultaneous electrical stimulation of two distinct zones of the dog's cerebrum, A. BAER (*Pflüger's Archiv*, Feb. 22, 1905) was able to study certain interesting phenomena that illustrates the extreme complexity of cerebral processes. Thus, certain so-called "inexcitable" areas of the cortex may be rendered excitable by stimulation of another excitable area, either at the same time or a little while before, with a constant current. The conclusion follows

that there can be no sharp line of division between excitable and non-excitatory areas. There are points of maximum excitability in the motor region, but it is possible, under favorable conditions, one may obtain muscular contractions by stimulating certain parts of the sensory zone. It is also possible to inhibit the effect produced by stimulating a part of the motor areas by means of a simultaneous stimulation of another zone. The fact that all parts of the cerebral cortex may cause contractions in voluntary muscles suggests that all these parts are connected by a very fine and extensive network of fibers. The question arises, How is it possible that stimulation of one part of this closely interconnected network causes activity in only one part of this maze, while all other parts are not affected? This question can not yet be answered in view of the paucity of data.

Acapnea Produced by Injections of Soda into the Blood.—If there be injected into the blood a substance capable of uniting with carbonic acid, according to A. Mosso (*Arch. Ital. de Biol.*, Jan. 28, 1905), the movements of respiration cease without any marked changes in the functions of the heart and nervous system. The author has already described a condition of diminution of the carbonic acid in the blood resulting from a lowered barometric pressure, and to this condition he has given the name "acapnea." He now finds that there is a close connection between acapnea and apnea (cessation of breathing), and that carbonic acid has a preponderating influence in evoking the movements of breathing. By injecting large doses of sodium hydroxide into the blood of dogs, the author observed a total arrest of breathing that sometimes lasts as much as three minutes. The more profoundly asleep the animal is the longer the cessation of respiration lasts.

The injection of soda also produces the interesting phenomenon of periodic breathing, which is characteristic of acapnea; that is, there are regular pauses of arrested respiration which may have the character of Cheyne-Stokes respiration. This result is of great importance in connection with the changes in breathing that take place at high altitudes. Independently of the diminution of oxygen it suffices that the tension of carbonic acid in the blood should be lessened in order to so affect the nerve centers as to bring about periodic breathing. The arrests of respiration produced by injections of sodium hydroxide are the longest that have yet been observed. The experiments show that it is the presence of carbonic acid in the blood rather than the absence of oxygen, that provides the chemical stimulus which sets the mechanism of respiration in motion. This view is not novel, but the author's results are not without considerable theoretical interest as bearing on this problem.

A Contribution to the Physiology of Glycogen.—A study of the quantitative relations of glycogen in embryonal tissues was made by W. ADAMOFF (*Zeitsch. f. Biol.*, Vol. xlii, N. S., Vol. xxviii). Chickens that have just been hatched contain glycogen in only a very faint amount. After the fourth day of life, when they have used up the glycogen which they obtained from the egg, and when they are fed, the glycogen content increases. New-born rabbits, in contradistinction to the adults, have a small quantity of glycogen in their tissues. The human fetal liver contains no more glycogen than that of an adult animal. These results show that richness in glycogen is not one of the characteristics of fetal tissues. Energy of growth and glycogenic content stand in no causative relation whatsoever.

PRESCRIPTION HINTS.

Mode of Using Analgesics in Migraine.—M. H. VINCENT (*Jour. de Méd.*, April 16, 1905) states that in many cases in which analgesics are badly borne at the onset of migraine, very favorable results are obtained if the alimentary tract is first quieted. In the paroxysmal attack of a neurasthenic who awakes in the morning with an aura and attendant symptoms after having slept badly, the first care is to eat nothing, otherwise indigestion is brought on which renders therapeutics impossible. Take at once the following powder:

R Bicarbonate of soda	gr. i
Carbonate of lime	gr. v
Hydrated magnesium	gr. ii
Bismuth subnitrate	gr. ¼
Powdered opium	gr. 1/16-1/8
Powdered belladonna.....	gr. 1/16-1/8

M.

At the end of an hour the following powder is given:

R Carbonate of lime	gr. ii
Magnesia	gr. i

M.

To this last powder M. Albut Robin adds five or six drops of the following:

R Picrotoxin	gr. 1/16
Alcohol (90 per cent.) enough to dissolve, or the same amount of the following solution, taking care not to use more than twenty-five drops in twenty-four hours:	
R Atropine sulphate	gr. 1/100
Morphine hydrochlor.	gr. 1/16

Ergotin gr. i
Syrup of wild cherry 3 ss

Filter.

At the end of two hours the process is repeated, giving with the last powder fifty grains of pyramidon. Towards two o'clock the patient, if hungry, may take teaspoonful of milk, clear or flavored, with coffee. If the malaise has not gone the first powder may be repeated or if there is headache give gr. xxv of pyramidon. In about all cases the symptoms have disappeared by this time and it is possible to give nourishment. It is better now to give a teaspoonful of soup every ten minutes, than to feed too sparingly. The principle of treatment is never to give an analgesic on an irritated stomach, and to administer something to take up the acid and a sedative remedy at the same time. In those cases of migraine afflicted with abnormal fermentation and stasis one finds the digestion retarded on account of a contracted pylorus or a reflex attack caused by food leaving the stomach in a state of greater or less irritation by reason of its prolonged stay here.

In case the stomach is found full the first powder mentioned is given to allay the irritability of the organ. If the headache lasts more than an hour gr. xxv pyramidon is given and nothing further is necessary. These attacks, due to fermentation, yield much more readily to treatment than those due to a purely nervous element. About midday give eggs, farina, or something of that nature, but no milk. In these gastric attacks, among others pyramidon will be found a very powerful and reliable analgesic, care always being taken to prevent the local irritant action which they are likely to cause.

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SATURDAY, MAY 13, 1905.

SUNSHINE OR MOONSHINE! WHICH?

It is regrettable that whenever a new chemical or physical agent hints at a possible therapeutic utility, a certain element of the lay press, with almost malignant avidity, proceeds to inflame the public mind with professedly serious accounts of the marvelous results obtained.

These sporadic outbreaks as a general rule do much harm, and it not infrequently requires much time and effort on the part of the profession to properly direct and inform the lay mind. But in the much discussed matter of the therapeutic possibilities of fluorescing substances the profession has been more to blame than the reporters.

Fluorescence is the property possessed by some substances of absorbing etheric vibrations of a given wave length and in turn giving forth vibrations of another wave length. In other words, it is the quality of transforming wave lengths. It has been proposed to introduce such a substance into the blood of a subject, and then to excite the blood with X-rays or Becquerel rays from radium, when the transformation of wave lengths are claimed to take place.

In the first place, according to Stokes's law, the presence of fluorescence is, with a few insig-

nificant exceptions, one of transforming a lesser into a greater wave length. But it is well known that the chemical activity of radiant energy varies inversely as the wave length, and that therefore the rays given out by a fluorescent substance will be of lesser activity than the rays absorbed, as they are of greater wave length than the latter. It becomes at once obvious that the rays which penetrate the tissues to set up the fluorescence must be more energetic than the fluorescent rays induced, and hence the reason for the production of the latter vanishes.

It has been ingeniously suggested that by rendering the blood luminous by fluorescence, "sunshine" might be introduced into parts of the body by the blood stream, where otherwise sunlight would never penetrate. If this were true, there would indeed be cause for alarm. The action of light is invariably destructive; every therapeutic benefit of light has been directly due to its power of irritation. The effects of light irritation of the lining membranes of the smaller brain vessels can better be imagined than described. The foolishness of producing liquid sunshine within the body is, among other things, convincingly shown in Major Woodruff's book on the effects of tropical light on white men. It is utterly illogical and fatuous.

But the most interesting observation on this perplexing question has been made by Dr. Piffard (MEDICAL NEWS, April 29, 1905), who had the unkindness to question whether the production of fluorescence in the blood by means of X-rays were a possibility. By a few simple experiments, consisting of trial and error, he has demonstrated that fluorescein and the other substances conspicuous in connection with this latest discovery, do not fluoresce at all to the X-rays or to radium outside of the body, and that therefore it is scarcely logical to assume that they will inside the body.

So at one fell swoop the disguise of "liquid sunshine" is torn off, and it stands forth revealed as naked "moonshine."

THE ADAMS-STOKES SYNDROME.

THE extreme value of a close relationship between the clinic and the collateral scientific departments of medicine is well illustrated by the results of the recent investigations into the pathology of the Adams-Stokes syndrome, by Dr. Erlanger of the department on Physiology of the Johns Hopkins University.

One of the most notable symptoms of this complex, it will be recalled, is the marked bradycardia, which is permanent and often extreme, the pulse-rate falling to thirty or twenty beats per minute, or even to ten or five. It was early recognized that this diminished pulse-rate was not only apparent, but real, so far as the ventricular action of the heart is concerned. But it was not known previous to Erlanger's work that there was a lack of synchronism in these cases between auricular and ventricular rate. This, however, was conclusively shown by means of cardiograms and tracings obtained from the jugular vein of a patient afflicted with the disease in question.

As the only muscular connection between the atrium and the ventricle is effected by means of a small muscle bundle, the existence of which had only shortly before been established by His, Humbert and Retzer, Erlanger concluded that a "block" in this bundle must be responsible for the anomalous heart action in the Adams-Stokes complex. The correctness of this surmise he satisfactorily demonstrated by animal experiments. By means of an ingeniously constructed clamp he could study the results of direct compression of the muscle bundle in question. When this was moderate, he obtained a partial block, manifested by a disturbance of the auriculoventricular rhythm, such that the ratio between the auricular and ventricular contraction became as 2:1, and on further compression as 3:1. Ultimately a complete block was established, in which every relation between the action of the two portions of the heart was interrupted. The injection of atropine at this point produced no effect whatever on the ventricle, while it increased the frequency of the auricular beat. Stimulation of the vagus similarly was without effect upon the ventricle, while its inhibitory action upon the auricle was unimpaired; in partial block, on the other hand, there was also inhibition of the ventricle.

These experiments seem to clear one of the most obscure phases in a fortunately rather rare disease, and reflect a great deal of credit upon the laboratory from which they have emanated and upon the ingenuity of Dr. Erlanger.

KIN TALYEN.

CERTAINLY no one, particularly the Russians, can question the energy or the progressive qualities of the Japanese. What the peculiar vim and push which seems characteristic of them as a na-

tion depends upon has long been a mooted question. Assuredly it was not, as the recent Russian reverses can testify, anything that was brewed in a samovar; nor yet does it appear to have been the first fruits of those that slept steeped in *vodka*. Even the diabolical "saki," that national rice-begotten drink and stimulant of the Mongolian races, did not seem to have the strength necessary to vivify the inert Chinese, even when exhibited in large doses, so that it is with a certain feeling of relief that we accept the explanation of our latest and most esteemed contemporary, the *Sanitary Journal of Tokyo*.

The *Sanitary Journal*, it seems, is "devoted to the advancement of the pleasure and happiness of home and society" and is published at 19 Ikenohata, Naka Chow, Shitaya, Tokyo. It is a four-page paper, elegantly and chastely printed in black and red, in Chinese characters that smack of oriental tea-box-ism, and is full of interesting reading matter, no doubt. Only one article, however, appears in English, which we take a paternal pleasure in copying:

"Our store was founded 300 years ago, just when Tokyo has come to exist as a city. We sell all kinds of medicine and drugs, as well as "Kin Talyen," the first discoverer of which is our ancestor; it is especially effectual as stimulant and febrifuge, and has good reputation throughout the country. As Japan is going to have a world-wide name, it is our earnest desire to make our business the world-wide one, and to import the special, toilet, spirits, and provisions. If there is any person or firm in Europe or America that desires to have a good sale of those articles above mentioned, in Japan, give us a notice; we will work as his or their agent on reasonable terms and propagate the sale for him or them, advertising on the *Sanitary Journal* and other vernacular periodicals.—Kwangaku Rxow Drug Store, No. 19 Ikenohata, Naka Chow, Shitaya, Tokyo, Japan. Proprietor, Shiba Daisuke, the Sixteenth Successor."

Surely no one can refuse a helping hand to this worthy successor to the ambitious drug store at 19 Ikenohata, Naka Chow, which, by the way, is the home of our valued contemporary, the *Sanitary Journal*. If our seventh sons of seventh sons, our natural bone-setters and our faith-healers are seeking a foreign *clientele*, what better opportunity could they have of propagating their practice than by the insertion of a professional card in the picturesque red and black columns of this enterprising vernacular periodical?

We hope, also, that the drug trade of America will give him a notice and make his business and their business "the world-wide one." The Japanese, unlike the Chinese, pay when they are sick and not when they are well, and as, according to

Gilbert and Sullivan, they neither flirt nor use pocket handkerchiefs, there is, it seems, much that could be taught to them by our enterprising drummer of a proprietary drug firm, who could doubtless establish a large and profitable connection in the lines of "special medicine and toilet."

We are convinced, too, after reading this new literary venture most diligently, that Kin Talyen could be imported and sold in this country at a profit. It is, moreover, doubtless a stimulant of rare power as well as a febrifuge of honorable ancestry, while we find modestly tucked away between the first and second pages the personal statement of our alien editorial colleague that it is truly a "blessed" tonic. Blessed, as he goes on to explain, with the occidental familiarity that heeds confinement because it makes three Japanese grow where two grew before.

That an article possessing such virtues should find a ready sale in European markets can easily be understood. Even with us in these strenuous days of small checks for quick results as a preventative to race suicide, the demand would be great, while the *per capita* bonus of France for the increase of her birth-rate would soon exhaust the national treasury. The importation of India shawls, with which the late and revered Queen of Great Britain was wont to reward her well-done, good-and-faithful-subjects, would become once more an animate industry, and the rust and decay of an ancient and effete civilization would be Japanned over with a virile varnish, which is as thoroughly up-to-date as is to-morrow.

It is, however, with the gifted and able editor, Mr. Shiba Daisuke, and not with Kin Talyen alone that to-day we have to do. To him we extend the glad hand of fellowship, or, as he would express it—"Shuku-Shi," and the MEDICAL News hastens to welcome the *Sanitary Journal of Tokyo* to the ranks of medical journalism, while it congratulates it most heartily on its efforts to "celebrate" this inestimable boon to humanity, thereby advancing the pleasure and happiness of home and society and adding, in no small degree, to the general gaiety of nations.

THE FIRST STEP THAT COUNTS.

The first action of Judge Magoon, the Governor of the Canal Zone, in his official capacity as Chief of the Sanitation Department of the Isthmus, is a most important one in its bearings on the medical profession.

In the first place, he has raised the pay and

emoluments of Dr. Gorgas to ten thousand dollars a year as a deserved recognition of not only what he expects him to do in the future, but also of what he has achieved in the past. This increase of pay is also extended to all heads of a department in sums varying from six hundred to a thousand dollars each, according to rank and present pay. In the second place he has approved of Dr. Gorgas' estimates for the fiscal year beginning July 1, 1905, exactly as they were submitted—a sum aggregating six hundred thousand dollars, not inclusive of medical supplies. Third, he has, as requested by Dr. Gorgas, approved of the appropriation of \$40,000 for the establishment of the hospital as desired by him, which sum is to be immediately available.

This not only shows a desire on the part of the authorities to push the matter of sanitation as rapidly as possible, but it is also indicative of a spirit of hearty cooperation with the medical officers in charge that will go far to producing the result which they both so earnestly desire. That it is entirely sincere and actuated by the single aim to get the best possible service on the Canal, no one who knows the personnel of the Commission and the medical staff can question. It is in fact to be regarded as the first fruits of the old commission that slept, and not the proverbial sweeping of the new broom.

ECHOES AND NEWS.

NEW YORK.

A Correction.—We are informed that an error occurred last week in the list of hospital appointments, whereby the first place at St. John's, Brooklyn, was said to have been obtained by R. R. Patterson. The name given should have been that of Alfred W. White.

Hospital Bill Passed.—Hackett's bill to authorize and provide for the erection and maintenance of a new public hospital in the city of New York, between Twenty-first and Forty-second streets, passed the Assembly. The capacity is to be seven hundred. The Board of Estimate may choose the site.

Hospital Appointments.—The following Physicians and Surgeons have secured places since the publication of last week's list: *Beth Israel*, A. C. Margulies, S. J. Goldfarb. *Jamaica* (Long Island), M. T. Powers, L. V. Clarke. *Ruptured and Crippled*, P. Fiaschi. *Lincoln*, first, W. R. Terry.

Hospital Extension Plans.—Plans have been filed with the Bureau of Buildings for the enlargement and remodeling of the main building of the Willard Parker Hospital in Sixteenth Street, east of Avenue C. A three-story extension, 38 feet wide and 78 feet long, is to be added on the front and rear, new fireproof staircases are to be built, and a new up-to-date plumbing plant installed. All the new construction work is to be fireproof, and the cost is estimated at \$20,000.

Increase in Meningitis.—In the death report of the Department of Health, issued last week, for the week ending Saturday at noon, it is shown that there were twenty-three more deaths from cerebrospinal meningitis than during the week before. Last week there were 110 deaths from this disease, against 87 of the week before that. Three weeks ago there were 104 deaths, and four weeks ago 117 deaths.

New Health Commissioner.—A Homeopath, Dr. Eugene H. Porter, of New York City, was appointed by Governor Higgins as the State Commissioner of Health to succeed Dr. Daniel Lewis, whose term has expired. The salary of the Commissioner is \$3,500 a year and expenses, and his term is for four years. Dr. Porter is a representative of the homeopathic school and the editor of the leading journal of that school. He is also a former president of the State Homeopathic Society.

Anatomy at the Post Graduate.—The New York Post Graduate Medical School has just inaugurated a separate and distinct department to be known as a School of Anatomy. This most important branch of medical science will henceforth be handled elaborately and with detail in all its branches. The managers of the Post Graduate School have long believed that insufficient attention is generally given to anatomy, and have awaited the psychological hour for this new departure. A separate building has been secured for the work, adjoining the established school and hospital buildings. Dr. Neil MacPhatter, the former Adjunct Professor of Surgery, has been placed in full charge.

Graduation Exercises of the Eclectic Medical College.—The forty-fourth commencement of the Eclectic Medical College of the City of New York was held last week at Carnegie Lyceum. Among those on the platform besides the faculty were Col. N. S. Dike, Thos. F. Byrne, Warren S. Burt, James Rascover, Alfred H. Curtis, Dr. Pitts Edwin Howes, of Boston; Dr. F. W. Abbott, of Taunton, Mass.; Dr. A. W. Forbush, of Boston, and Dr. A. R. Tiel, secretary of the State Board of Examiners. The program included prayer by the Rev. Dr. Potter, report of the faculty by the dean, who congratulated the trustees and alumni upon me showing that the students had made before the State Board, and who also announced several valuable donations. Degrees were conferred by W. R. Spooner, president of the board of trustees, prizes were presented by Prof. J. H. Gunning, and the valedictory by N. M. Villone. The members of the graduating class are: Phillip L. Beream, A.B.; William A. Cimillo, M. Fallick, A.B.; Julius Goldsmith, E. H. Keidan, Ph.G.; M. B. MacDermott, A. J. Mitchell, B.S.; C. L. F. Noark, Ph.G.; G. W. Schaefer, Ph.G.; C. H. S. Selinger, James Slavomitz, M. M. Thaler, A.B., and N. M. Villone. In the audience were many out-of-town doctors and friends of the college, notable among them being: Dr. John Perrins, of Boston; Dr. E. H. King, of Saratoga, N. Y.; Dr. O. W. Sutton, of Bath, N. Y.; Dr. L. H. Smith, of Buffalo, N. Y.; Dr. Q. J. Whitney, of Una-dilla, N. Y.; Dr. L. E. Horton, of Avoca, N. Y.; Dr. F. D. Gridley, of Binghamton, N. Y.; Dr. Marion Vries, and John W. Bookwalter. A dinner to the graduating class was given at the Hotel Astor, where covers were set for 150.

Defeat of the Osteopaths.—Apropos of the recent scramble of the osteopaths to become legalized in this State, the *Times* prints the following: It is hard to tell whether Tuesday's vote in the State Senate on the bill to put "osteopaths" on a legal level with doctors of medicine is the more discouraging when viewed as illustrative of the Senate's intelligence or of that of the

voting population that sent to Albany so many men capable of lending their aid to a measure so harmful to public interests, so dangerous to the public safety. One more vote for the bill and it would have passed the Senate, but, fortunately for New York's reputation as a civilized State, that does not mean that within one of half the Senators are so densely benighted that the specious pleas of the too ambitious masseurs convinced their substitutes for minds. Only eighteen members of our nominally wiser and more careful House were in that lamentable condition, while twenty-five of them proved that they had combined some sense with some information by opposing the bill. Thus was it—killed? Oh, no; only stunned, and Senator Davis, of Buffalo, says he will resuscitate the miserable little monster at the first opportunity, meaning by the first opportunity, of course, the first time when he thinks the intelligence of the Senate is sufficiently diluted to give the thing a chance for its life. The prospect is not reassuring. Meanwhile we can get what happiness we can from the thought that for the present the masseurs will remain under their present absurdly slight restrictions, and that homicide will not be for them entirely without its inconveniences, sometimes rising to dangers. That's something.

Orthopedic Dispensary.—It is announced in the thirty-seventh year book of the New York Orthopedic Dispensary and Hospital, for the year 1904, that the institution has, since October last, been free from debt, the deficit of \$22,000 having been wiped out through the efforts of several friends. The yearly expenses of the institution at present amount to about \$37,000, while its income from invested funds, subscriptions, and contributions is about \$30,000. The difference is generally made up through entertainments, portrait shows, and the like, but the president, O. Egerton Schmidt, in his address, which prefaces the report, says that this is not a satisfactory nor certain source of income. For this reason it is hoped that the endowment fund, now amounting to \$102,000, may be increased to at least \$200,000 in the near future. One of the most important events in the life of the institution during the year 1904 was the opening in July of the country branch and industrial school at White Plains, where to children is given practical education while under treatment for their deformities. This important adjunct to the work of the dispensary and hospital was the gift of Miss Emily A. Watson and Mrs. Walker in memory of their father, John Watson. At the time the annual report was prepared there were thirty-nine children under treatment at the country branch. As to the work accomplished by the institution, the total number of patients treated during the year ending September 30, 1904, was 4,017, an increase of 138 over the number treated the year before. Of these 300 cases were cured, 497 discharged, relieved, 1 discharged as incurable, 370 cases not treated, 22 died, 14 cured, and continued for observation, and 2,813 continued for observation. The number of visits to the dispensary by patients was 19,305, the number of visits made by nurses to patients at their homes, 3,116, making a total of 22,421. The number of operations performed was 211, and the number of patients operated upon 140. Subscriptions to the endowment fund have now reached a total of \$102,176, and during the year the general subscriptions amounted to \$3,998. The donations, which are classified separately, were \$4,110. For annual free beds, which are endowed for that length of time upon payment of \$250, the sum of \$6,250 was received. The portrait show yielded the institution \$7,010. The total receipts for the year were \$42,176.33.

New Organization of Milk Dealers.—Nearly all the larger milk dealer in the Borough of Manhattan, besides a number in Brooklyn, have just united in an organization, under the title of the Association for Improvement of the Milk Supply of New York. The object of the movement is expressed in the name of the new organization; but its significance lies in the fact that the principal wholesale and retail dealers in milk have now voluntarily come into cooperation with each other to improve the quality of milk sold in this city. Heretofore, each company or individual owning a milk business has taken only such steps for improvement of the milk sold, as seemed necessary to him; or, in some cases, such as were required by the Department of Health from time to time. The dealers now propose to act as a unit for improvement of their product, and will use every possible means to this end, including full co-operation with the Department of Health. The Association has retained Dr. E. J. Lederle, formerly Commissioner of Health, as consulting sanitarian, adviser and analyst; and he, with the Executive Committee of the Association, will represent it in its relations with the Department. The membership of the Association already includes nearly forty firms and individuals, among which are the Briarcliff Farms, Sheffield Farms, Slawson, Decker Co., The McDermott-Bunger Co., The Mutual Milk & Cream Co., The Beakes Dairy Co., T. O. Smith's Sons, Thorndale Farms, and other representative companies. While the several companies in the Association differ widely as to the sources of their milk supply, and the manner of its distribution, yet they have many interests in common, so that the men having the management of the larger milk businesses, came to believe that some concerted action by milk dealers, especially the wholesalers, was advisable, not only to strengthen their position in relation to the sanitary authorities, but to take steps for the scientific control of milk and its products, with a view to their improvement. Up to the present time the wholesaler has been in an unsatisfactory position with respect to the commodity he is handling. In most other lines of trade, the large dealer is either a direct manufacturer or else he is in a position to control the quality of the goods he is selling, and to know all the conditions under which his product is made and distributed. It is otherwise with the dealer in milk. He has at best very uncertain control of the small farmers from whom he buys at various creameries and milk stations; and while he can be reasonably sure of the methods used by his own employees in handling the milk in transit, he is again in danger of having his milk mishandled or even adulterated by a retailer who may be dishonest. The result is that he has been buying and bringing into New York City a product, the quality of which is at best uncertain, and turning it over to retailers whose actions he cannot control; meanwhile he is well aware that the question of the quality of the product is being constantly raised by the sanitary authorities, and the conditions of the business are such as to make him the responsible party in case of prosecutions for discovered impurities or adulterations. From this it happens that he is constantly liable to the payment of fines and other legal expenses, and in some cases must risk even the revocation of the permit under which he is doing business. A more unsatisfactory position for the safety of honestly invested capital and business experience can hardly be imagined. On the other hand, it is believed that direct and positive advantages will follow the organization of milk dealers for mutual improvement. It is well known that the milk trade is gradually tending to a point where the price of milk will depend upon its actual quality, with respect both to amount of butterfat and to purity

from a bacteriological standpoint (cleanliness). The great success attending such milk businesses as have aimed first at quality is not surprising, when it is recalled that thousands of New York City patrons have become interested in the question of pure milk, and are willing and able to pay for what they want. The opportunity to supply this demand, and to aid its growth, is open to all milk dealers, but it is not possible to do this unless measures are taken to obtain positive knowledge of the present condition of the product as it is received in the city each day, and to take steps for the improvement of sanitary conditions at farms, dairies and creameries. Members of the Association, in their individual capacities, are already at work in the interest of the new movement. The work done by and for them includes periodic examination of milk products from the various milk stations and creameries, and of milk from the several farms supplying each station. Where these examinations disclose opportunities for improvement in the milk, further inspections are made at the creamery, especially to determine whether the sanitary conditions are as they should be; next, any farmer who is supplying milk below the creamery standard, is notified of the fact, and advised on methods for improving the product of his farm, with respect both to the richness and to the cleanliness of his milk. The wholesale dealers are also aiming to improve the conditions under which milk is shipped to this city. Some of them are introducing pasteurization as a means to greater cleanliness and better keeping quality of the milk, and are inducing those retailers who handle milk in groceries, in the tenement districts, to use better methods in caring for the milk while it is in their stores. Another feature of the Association's work will probably be a series of lectures by physicians, sanitarians and food experts, designed to give the wholesale and retail dealer in milk some further knowledge of the scientific side of the business in which he is engaged.

PHILADELPHIA.

Hospital Report.—During April 189 patients were admitted, 197 discharged, and 405 treated at the Presbyterian Hospital. In the dispensary 2,059 patients were treated.

Students Addressed by Naval Director.—The senior students of the Jefferson Medical College listened to an address, May 4, delivered by Dr. R. A. Marrian, Director of Medical Service of U. S. Navy.

Nurses Receive Diplomas.—The Medico-Chirurgical Hospital Training School delivered diplomas to twenty-one nurses, whom the authorities now regard as qualified to take up their life's work. The diplomas were presented by Dr. Judson Daland, after which Dr. Ernest Laplace delivered the address of the evening. Miss Edith A. McPherson, directress of the training school, was given much credit for the efficiency attained by graduates.

Management of the Home for Incurables Meets.—At the meeting of the Board of Managers of the Philadelphia Home for Incurables, the following officers were elected: President, Mrs. Edward Ogden; Vice-Presidents, Mrs. Edward Fell, Mrs. H. Smucker, Mrs. D. L. Crozier, and Mrs. W. P. Baird; Corresponding Secretary, Mrs. H. S. C. Nichols; Recording Secretary, Mrs. E. Henderson; treasurer, Mrs. Charles H. Thomas. At the same meeting means of obtaining money to pay for the building erected last year at a cost of \$55,000 were discussed.

Philadelphia Academy of Surgery.—At the meeting of this society, which was held May 1, Dr. John H. Jopson read a paper entitled, "Acute Gangrenous Appendicitis in Typhoid Fever Simulating Perforation."

Dr. Henry R. Wharton reported, "Three Cases of Fracture of the Head of the Tibia." Dr. Edward Martin reported a "Case of Suture of the Femoral Artery." Dr. Francis T. Stewart demonstrated "A New Method of Immediate Enterostomy; reported "A Case of Suture of the Femoral Artery," and showed "A Specimen of Volvulus of the Omentum."

Bequests.—According to the will of Mrs. Clement B. Newbold, the Maternity Ward of the University Hospital will receive \$5,000, the House of the Merciful Saviour for Crippled Children, in Philadelphia, \$5,000, Foreign and Domestic Missionary Society of the Protestant Episcopal Church in the United States, \$20,000, and the trustees of the Christmas fund of the Diocese of Pennsylvania for Disabled Clergy of the Protestant Episcopal Church, \$10,000. The will of Emma F. Moffitt gives the Rush Hospital at Malvern, Pa., \$300, and the St. Faith's Home at Tarrytown, N. Y., \$800, out of an estate of \$10,000.

Pennsylvania Hospital Records.—During last year 44,138 patients were treated, the ambulance made 1,565 calls, and the hospital did more work than in any one of the preceding years. As a result of this there is a deficit of \$40,000. At the annual meeting the managers pointed out the necessity of obtaining more contributors, and elected the following managers: Benjamin H. Shoemaker, T. Wistar Brown, Charles Hartshorne, James T. Shinn, John B. Garrett, John W. Biddle, John T. Lewis, Jr., John S. Jenks, Joseph E. Gillingham, Archibald R. Montgomery, Henry H. Collins, and Joseph B. Townsend; treasurer, Henry Haines.

M. D. for Chinese Girl.—Miss Li Bi Cu of Hing Chua, China, who has spent the last four years in this city taking a medical course at the Women's Medical College, will graduate from that institution this year with high honors. So far as is known Miss Li is the first Chinese woman to study medicine in this country. She was born in Hing Chua, where her father is the leading spirit of the Methodist Church. This young woman has been in this country more than eight years and has spent all of her time in hard study. She first studied at Herkimer College, New York. She graduated from that institution with high honors, and decided to take her medical course in this city.

The Meeting of the American Therapeutic Society.—This association convened in Philadelphia, May 4, 5, and 6, at the Bellevue-Stratford. The President's reception and supper were held Thursday evening at 7 o'clock in the Red Room of the Bellevue-Stratford Hotel. The guests present were Drs. John H. Musser, James C. Wilson, James Tyson, H. C. Wood, R. C. Curtin, S. Solis-Cohen, Judson Daland, T. L. Coley, J. V. Shoemaker, all of Philadelphia; Rev. T. C. Easton, Drs. Noble P. Barnes, Arthur J. Hall, L. Kolipinski, D. O. Leech, John S. McLain, F. P. Morgan, R. Reyburn, Jesse Shoup, and W. M. Sprigg, all of Washington, D. C.; Drs. Carl Beck, E. B. Bronson, E. D. Fisher, G. B. Fowler, P. B. Porter, W. H. Porter, T. E. Satterthwaite, and R. W. Wilcox, all of New York City; Dr. F. E. Stewart, of East Orange, N. J. The members of the society were entertained at luncheon at 1 o'clock, Friday afternoon, by Dr. John V. Shoemaker, at his home. Dr. H. C. Wood gave a luncheon to the society in his laboratory at 1 o'clock, on Saturday afternoon.

The Governor Acts Upon Bills.—Governor Packer approved the bill providing for the registration of births and deaths. According to the terms of the bill the Central Bureau of Vital Statistics shall be under the immediate direction of a State Registrar, who is to be appointed by the State Commissioner of Health. The registrar must be a physician of not less than three

years' practice, and must be a competent vital statistician. His term of service will be four years, at an annual salary of \$2,500; he is allowed four assistants with a salary of \$1,000 each. The bureau will be quartered in the State Capitol. Each city, borough and township shall constitute a primary registration district to be in charge of a local registrar, whose duty it will be to return all births and deaths. The bill which provides for the establishment of a Board of Examiners for osteopathic physicians has been vetoed. His reasons for refusing to sign the bill accompanied the veto. He said if such a bill were to become law the authority of the State would be given to a system of practice in the healing art which excludes the use of medicine and surgery.

CHICAGO.

Election of Dr. Wm. J. Butler.—Dr. Wm. J. Butler has been elected Assistant Professor of Pediatrics in Rush Medical College, University of Chicago.

Appointment of Dr. Hunter.—Dr. Warren H. Hunter has been appointed a member of the medical staff of the Coroner's office. Dr. Otto W. Lewke will be retained.

Election of Dr. Butler.—At a recent meeting of the Board of Directors of the Chicago Post Graduate Medical School, Dr. Geo. F. Butler was elected Professor of Medicine.

Optometry Bill.—After hearing of this bill by the Illinois Senate, and speeches made against its enactment by Drs. Wm. H. Wilder, E. V. L. Brown, and J. A. Egan, of the State Board of Health, the bill was killed by unanimous vote of the Committee.

Medical Staff of German Hospital.—At a recent meeting the following appointments were made: Consulting physician, Dr. Julius H. Hoelscher; attending physicians, Drs. Rudolph Menn and Frank W. Lambden; attending surgeons, Drs. Wm. C. Wermuth, and Emanuel J. Senn; attending gynecologists, Drs. H. Edward Sauer and Cecil von Bachelle; attending oculist and aurist, Dr. David Fiske; attending obstetrician, Dr. W. F. Grosvenor, and skin and genito-urinary diseases, Dr. Louis E. Schmidt.

Reduction Method for Disposal of Garbage.—There is only one successful method for disposing of garbage in large cities, and this is by the reduction method, according to Alderman Walter J. Raymer, who recently discussed this subject. He stated that no crematory, so far as he knew, has been successful in handling the problem. Garbage consisted of 95 per cent water, and one could not burn water. Chicago has reached a time when the question of garbage disposal must be solved. A difficulty that confronts us is that our debt limit has been reached. A contract for five years would embrace an expense of \$5,000,000. This money cannot now be raised.

Free Popular Lectures on Health Topics.—The Chicago Medical Society has rendered a distinct service, both to the public and to the Health Department, by its course of free popular lectures on health topics. The last of these for the season, on "Vaccination and Smallpox," by Dr. Herman Spalding, chief medical inspector of the department, and on "Epidemic Cerebro-spinal Meningitis," by Dr. Frank Billings, were especially timely and valuable. That Dr. Billings has already done much to allay the popular and the professional dread of an unfamiliar and therefore a terrorizing disease, which has been unduly exploited alike in the secular and the medical press. Unduly exploited, at least as far as Chicago is concerned, for, as a matter of fact and figures, not only cerebrospinal but all forms of meningitis show a much greater relative decrease of

mortality since 1898 than do many other causes of death which attract much less attention. Since the last cerebrospinal fever flurry, in 1898, when the sensationaly dreaded disease caused 17 deaths all told in Chicago, there has been an average decrease of .21 per cent. in the deaths from the different forms of meningitis—epidemic, tuberculous, cerebral and spinal—and the greatest total number of deaths from the epidemic form in any one year was 18 in 1899. During the same period there has been an average increase of from 52 to 55 per cent. in the mortality from measles, scarlet fever and whooping cough. The total deaths from epidemic cerebrospinal meningitis in the last seven years was 55; from measles there were 1,086 deaths; from whooping cough, 1,428, and from scarlet fever, 1,875 deaths. In the first four months of this year there have been six deaths from the sensational disease, 117 from measles, and 159 from whooping cough.

GENERAL.

Meningitis in Russia.—Several deaths from cerebrospinal meningitis have occurred here. A dispatch from Kushina says that two deaths from that cause have occurred there.

Meningitis in Germany.—Contrary to the prediction of medical men the epidemic of cerebrospinal meningitis has not abated with the advent of warm weather. There have been fresh outbreaks of the disease in the villages of Upper Silesia, and it has also increased in virulence in the larger centers. There has been an outbreak in the Eleventh and Fifty-first infantry regiments at Breslau.

Honor for Professor Pozzi.—Pupils, friends and colleagues of Professor Samuel Pozzi, the famous French surgeon, have decided to present him with a medal to commemorate his recent presidency of the Seventeenth Congress of Surgery and his promotion to the grade of commander of the Legion of Honor. The medal has been designed by Chaplain and will be presented at a banquet which will be given at the conclusion of the summer term of the Paris Faculty of Medicine.

German Laryngological Society.—The German Laryngological Society, which was founded on the initiative of Professor Moriz Schmidt, of Frankfort-on-the-Main, in August, 1904, will hold its first annual meeting at Heidelberg on June 13. Professor Bernhard Fraenkel, of Berlin, will deliver an address on the future of laryngology. Professor Schmidt is the president, Professor Fraenkel, vice-president, Dr. G. Avellis, of Frankfort-on-the-Main, and Professor Paul Heyman, of Berlin, secretaries, and Dr. Neumayer, of Munich, treasurer of the new society.

X-Ray Congress.—The International Congress, called to celebrate the tenth anniversary of the discovery of the Roentgen ray and to collate the latest applications and developments, was held in Berlin, April 30 to May 3. Professor Roentgen was present. The French representation was particularly strong. Among the Americans present were Dr. Leonard, of Philadelphia, Dr. George Kunz, of New York, and Dr. Rudisjicinsky, of Cedar Rapids, Ia. The latter's thesis was "The Study of the Degenerative Processes of the Brain by the Roentgen Rays." An exposition of Roentgen apparatus was a feature of the congress.

French Medical Study Excursions.—The seventh Voyage d'Etudes Médicales will take place this year from September 1st to the 14th, under the presidency of Professor Landouzy. The health resorts of the Southwest of France will be visited as fol-

lows: Luchon, Siradan, Barbazon, Capvert, Bagneres-de-Bigorre, Argèles, Barèges, Saint-Sauveur, Cauterets, Pau, Eaux-Bonnes, Eaux-Chaudes, St. Christau, Salies-de-Béarn, Biarritz, Cambo, Hendaye (Sanatorium), Dax and Arcachon. A detailed program will be published later. All communications should be addressed to the Organizer of the Excursions, Dr. Carron de la Carrière, 2, Rue Lincoln, Paris.

Morphine Mixed With Flour.—The steamship Coptic brings a report of many deaths in the inland country of China. According to a story from Amoy, it has been the custom to smuggle morphine into that section, as the duty on the drug was very heavy. Recently a number of boxes of the drug were smuggled inside a shipment of flour. In some manner the boxes broke, causing the drug to become mixed with the flour. Instead of the flour being condemned, it was sold to the up-country districts. Within a week the Chinese began to die, and for nearly a month the deaths continued from poison administered in apparently the most mysterious manner. It is estimated that fully fifty persons died of morphine poisoning.

Royal College of Physicians.—Sir Richard Douglas Powell, M.D., who has just been elected president of the British Royal College of Physicians, is a Londoner. He was born at Walthamstow, and was a student at University College Hospital, which has always been famous as the training-ground for the University of London, from which he graduated with honors in 1866. He is one of the consulting physicians to Middlesex Hospital and to the Brompton and Ventnor Hospitals, and he is a late president of the Clinical and Medical societies. He has written a good deal on medical subjects. Until 1899 he was one of the physicians extraordinary to the Queen, and he is now physician extraordinary to the King.

Milk and Scarlet Fever.—In a recent report, as outlined in the *British Medical Journal*, Dr. Anningson, Medical Officer of Health for Cambridge, traced the origin of a recent outbreak of 78 cases of scarlet fever apparently to infected milk. The dairy farm immediately implicated was in good order, but the dairyman had supplemented his own milk by a purchase from a purveyor who obtained his supply from fifteen different sources. A man employed in milking at one of these was found to have his hands and feet in a state consistent with a belief that he had recently suffered from scarlet fever. His child was in the same condition, and both had visited relatives in a village in which scarlet fever was stated to have been present. No further cases attributable to the Cambridge dairyman's milk occurred after the supplementary supply was stopped.

Quackery in Germany.—The following figures, taken from the *British Medical Journal*, show the prevalence of quackery in the German Empire. In Prussia the number of persons who practise medicine without a legal qualification is 4,104, being in the proportion of 22.8 quacks to every hundred legitimate practitioners. That quackery is increasing rapidly may be gathered from the fact that in the period 1897 to 1902, while the population of Berlin increased by 30 per cent., the number of quacks increased by 57 per cent. There are in Germany 835 "nature healing" associations with a total membership of 111,887. In the course of three years 392,000 pamphlets setting forth the excellencies of that system of quackery were distributed, and in the single

year 1902 no fewer than 3,056 public addresses in praise of it were delivered. One of the journals devoted to the propagation of nature healing has a circulation of 112,000 copies. The text-book of Bilz, the prophet of the cult, has had a sale of a million copies, while of that of his former employee, Platen, 250,000 copies have been sold.

Anti-Tuberculosis Movement in Nova Scotia.—After a long struggle with ignorance, prejudice and apathy, the effort for measures directed to the cure and prevention of tuberculosis in Nova Scotia is gaining ground. It has received official sanction in the opening, last summer, of a government sanatorium for the treatment of the less advanced stages of the disease. The open air treatment is adopted and the accommodations, though limited to twenty patients, are of an admirable type. The sanatorium has been open long enough thoroughly to demonstrate its efficiency, and it is to be hoped that other similar institutions, public and private, will help to rescue the province from a scourge which attacks the population there with the same virulence it exhibits in New England.

The Housing Problem in the Smaller Cities.—One of the most hopeful aspects of the housing problem is the attention it is attracting in the smaller cities, where conditions have not yet reached the deplorable state of those in the more congested centers, but where the fancied security of the public in that respect might easily have let slip the opportunity for the "stitch in time" were it not for the general interest in the matter aroused by the investigations in New York and other large cities. New Jersey is taking the matter up with considerable vigor. Portland, Maine and Des Moines, Ia., are among the towns which have discovered an alarming but not hopeless nucleus of congestion and lack of sanitation, and have begun an agitation for curative and preventive measures which is to be heartily commended to every city in the country. Now is the time for the "ounce of prevention," and the practitioners of these smaller cities are in a position to speak with authority upon the matter and do much to save their communities from entering upon the career of cruelty and wastefulness which is so hard to check in the crowded metropolis.

Maine Medical Association.—The fifty-third annual meeting will be held in the Common Council Chamber, City Building, Portland, Me., Wednesday, Thursday and Friday, June 7, 8 and 9. The following is the program of papers to be read: "Diphtheria and Pharyngitis and their Demands for a Correct Diagnosis," by Dr. Benjamin Franklin Makepeace, of Farmington, Maine; Discussion by Dr. James O. McCorison, of North Berwick, and Dr. F. L. Dixon, of Lewiston; "Vesical Fistula," by Dr. H. H. Purinton, of Lewiston; "Post-Mortem Examinations," by Dr. H. E. Milliken, of Waterville; "Urano-Staphylorrhaphy," by Dr. Owen Smith, of Portland; "Personality as a Remedial Measure," by Dr. B. F. Barker, of Bath; "Paper," by Dr. Chauncey R. Burr, of Portland; "Tetanus," by Dr. Wallace E. Webber, of Lewiston; "Treatment of Cold Abscesses," by Dr. Hiram Hunt, of Greenville; "Preliminary Anesthesia with Ether Sequence," by Dr. H. F. Twitchell, of Portland; "The Uncertainties of Medicine, Their Lessons," by Dr. George A. Phillips, of Bar Harbor; "Cerebral Arterio-Sclerosis," by Dr. Chas. B. Witherle, of Portland; "The Necessity for County Sanatoria, for the Treatment of Tuberculosis," by Dr. E. H. Bennett, of Lubec, Maine; "Annual

Oration," by Dr. Charles Jewett, of Brooklyn, N. Y.

Oklahoma State Medical Association.—This society met in Guthrie, Oklahoma, May 10 to 11, 1905. The following papers were read: President's Annual Address, by Dr. A. K. West; "Myxedema," by Dr. R. H. Tullis, of Lawton; "Some Symptoms and Peculiarities in Diseases of Children," by Dr. K. D. Gossom, of Cluster City; "Drug Tolerance," by Dr. W. C. Fulkerson, of Marshall; "The Advance of Ophthalmology during the Last Twenty Years," by Dr. L. Haynes Buxton, of Oklahoma City; "Early Treatment of the Insane," by Dr. W. W. Rucks, of Guthrie; "Intussusception," by Dr. W. E. Dicken, of Oklahoma City; "The Obstetrical Crime and its Remedy," by Dr. H. K. Wilson, of Enid; "The Modern Treatment of Tuberculosis," by Dr. L. B. Morse, of Guthrie; "Difficulties in the Diagnosis of Appendicitis," by Dr. Fowler Border, of Mangum; Address, "The Medical Profession from a Legal Standpoint," by Hon. P. C. Simmons, Attorney-General; "Tetanus," by Dr. R. V. Smith, of Guthrie; "Hernia," by Dr. G. A. Wall, of Oklahoma City; "Conservatism in the Treatment of Complicated Purulent Otitis Media," by Dr. H. H. Wynne, of Oklahoma City; "Practical Prescription Writing," by Dr. L. T. Noblitt, of Weatherford; "Cycloplegics or Astringents—Which?" by Dr. E. E. Hamilton, of Wichita, Kans.; "Eddies in the Practice of Medicine," by Dr. J. T. Gray, of Stillwater; "Injustice of the Law of the State Medical Examining Boards," by Dr. Virgil A. Voyle, of Gotebo; "Nephritis in Pregnancy," by Dr. J. A. Gillis, of Frederick; "Chronic Urethritis," by Dr. R. T. Edwards, of Oklahoma City; "The Puerperal State," by Dr. A. B. Fair, of Frederick; "Appendicitis, Urinary Calculi, Kidney Decapsulation and Fixation," by Dr. A. L. Blesh, of Guthrie; "Food and Drug Adulteration," by Dr. C. D. Arnold, of El Reno.

Recent Works on Poverty and Health.—There has been for some time great activity in foreign countries, touching the problem of poverty as it relates to health, the care of the aged, support of homeless children, the housing question and kindred topics. Many of these subjects are treated in the form of rather extensive monographs put out by associations whose purposes include the different lines of social activity. One of the more important is the "Deutscher Verein für Armenpflege und Wohlthätigkeit," which has put out recently *Die Beratung Bedürftiger in Rechtsangelegenheiten*, H. von Frankenberg and Ernst Krug, and published by Duncker & Humblot, Leipzig, at 60 cents.

On the relation of the problem of poverty and disease a most valuable contribution is found in *Die Aufgaben der Armenpflege bei der Bekämpfung der Tuberkulose*, and *Die Fürsorge für Ausländer in Deutschland*, published by the same houses, at 75 cents and \$1.15, respectively. Of interest as regards the care of the children is *Kinderarbeit und Gesetzlicher Kinderschutz in Oesterreich*, by Sigmund Kranz; Denticke, Leipzig. Price, \$1.05.

Not a little valuable data is included in the German study referred to of the relief problems involved in the struggle against tuberculosis. The fact is brought forth that tuberculosis produces 100,000 deaths annually in Germany, or one-seventh of all deaths. Of these, the figures show that a close relation exists between the social classes and the number of deaths. Four times as many cases occur among the poorer classes as among those better situated. This the author says makes the problem of limiting the malady a part of the larger

social problem of handling poverty. The efforts to limit the disease are discussed under two general heads, the public control of the cities as to general health conditions, sanitation, and the like, and the more immediate practical efforts to limit it by the care of the infected. An idea of the increase of the trouble, modified somewhat by the fact of an increased attention to it, may be gained by the following: The total number treated in 1898 was 4,910, in 1900 it was 11,094, and in 1892 it was 16,489. The expense had also about quadrupled, rising from 1,546,758 marks in 1898 to 5,828,597 in 1902. The greatest step toward improving the condition in this regard was the organization in 1895 of a central committee on establishing hospitals for tuberculosis patients. The chief problems recognized are the destruction of the bacilli and the separation of the infected from the other patients. Both these problems are made more difficult through the conditions of poverty, crowded houses making infection more frequent among people who have no means to care for the sick.

Illinois State Medical Society.—The fifty-fifth annual meeting of this society will be held at Rock Island, Ill., May 16, 17 and 18. The following papers will be read: "What We Must Learn and Unlearn in the Treatment of Tuberculosis," by Dr. J. W. Pettit, of Ottawa; "Present Status of Serum Therapy," by Dr. E. R. Larned, of Chicago; "Practical Significance of Certain Common Symptoms in the Upper Abdomen," by Dr. J. F. Percy, of Galesburg; "Indormescent Shock," by Dr. H. T. Patrick, of Chicago; "The Consideration of Late Hereditary Syphilis," by Dr. R. R. Campbell, of Chicago; "Percentage Modification of Milk in the Home," by Dr. Chas. R. Spicer, of Springfield; "The Tuberculosis Problem in Illinois," by Dr. Homer M. Thomas, of Chicago; "The Importance of Diet in the Treatment of Tuberculosis," by Dr. Adella Sater, of Ottawa; "Mixed Infection in Tuberculosis, with some consideration as to Treatment," by Dr. Ethan A. Gray, of Chicago; "Climatic Treatment of Tuberculosis, with Special Reference to Colorado," by Dr. C. L. Wheaton, of Chicago; "Typhoid Fever," by Dr. G. G. Craig, of Rock Island; "Differential Diagnosis of Small-pox (Lantern Slides)," by Dr. Heman Spaulding, of Chicago; "The Value of Isnordia Palustris in the Treatment of Erysipelas. Report of Cases," by Dr. H. C. Mitchell, of Carbondale; "Pericarditis," by Dr. J. H. Bacon, of Cleveland, Ohio; "Scrofula," by Dr. H. G. Anthony, of Chicago; "The License and Control of the Practice of Medicine in the State of Illinois," by Dr. Geo. W. Webster, of Chicago; "Diagnosis of Chronic Nephritis," by Dr. Chas. L. Mix, of Chicago; "Ocular Manifestations of Chronic Nephritis," by Dr. Leigh E. Schwartz, of Chicago; "Medicinal Treatment of Chronic Nephritis," by Dr. A. R. Elliott, of Chicago; "Results of Surgical Treatment of Chronic Nephritis," by Dr. A. H. Ferguson, of Chicago; "Report of Three Cases of Intermittent Claudication," by Dr. S. R. Pietrowicz, of Chicago; "The Glycosuria of Hepatic Insufficiency," by Dr. A. C. Crofton, of Chicago; "Respiratory Oxidation Stimulants in Nephritis; Pulmonary and Allied Crises," by Dr. Geo. F. Butler, of Chicago; "Febrile Symptoms of Hepatic Syphilis," by Dr. Jos. L. Miller, of Chicago; "Parenchymatous Keratitis and Subsequent Irido-Choroiditis with Loss of Vision," by Dr. Chas. H. Brobst, of Peoria; "Syphilitic Meningitis in Children," by Dr. W. J. Butler, of Chicago; "Educational Treatment of Neurasthenics," by Dr. Chas. D. Center, of Quincy; "Gastric Fatigue," by Dr. F. B. Turck, of Chicago; "Some Phases of Disturbed Metabolism," by Dr. R. W. Webster, of Chicago; "Some Eye Prob-

lems the General Practitioner is called upon to Solve," by Dr. R. J. Tivnen, of Chicago; "Variola," by Dr. L. A. McFadden, of Peoria; "Poisoning from Oil of Wintergreen," by Dr. F. C. Vandervort, of Bloomington; "X-Ray in Leucemia," by Drs. J. A. Cappa and J. F. Smith, of Chicago; "Pulmonary Edema following Thoracentesis, with report of a case," by Dr. S. W. Miller, of Peoria; "Air Examinations; Their Importance and Results," by Dr. A. Gehman, of Chicago; "Intestinal Parasites," by Dr. F. Smith, of Urbana; Address, "The Commerce of Surgery," by Dr. Fernand Henrotin, of Chicago; "Surgery of the Upper Abdomen," (a) Surgery of the Stomach, by Dr. Arthur Dean Bevan, of Chicago; (b) Surgery of the Bile Tracts, by Dr. Carl Black, of Jacksonville; (c) The Emergencies of Pancreatic Surgery, by Dr. Weller Van Hook, of Chicago; (d) Surgery of the Duodenum, by Dr. Emerson W. Sutton, of Peoria; (e) The Surgical Treatment of Injuries to the Spleen due to Subcutaneous Penetrating Wounds; the Value of Splenectomy in Certain Anemias Associated with Enlargements of the Spleen, by Dr. M. L. Harris, of Chicago; "Surgical Tuberculosis," by Dr. William E. Guthrie, of Bloomington; "Tuberculous Nephritis. Review of literature and report of case," by Dr. Robert Christie, of Quincy; "Some Errors in the Diagnosis of Abdominal Troubles," by Dr. Clifford U. Collins, of Peoria; "Congenital Club Foot," by Drs. John Ridlon and Charles E. Eikenbury, of Chicago; "Malignancy in Uterine Myomata," by Dr. Henry F. Lewis, of Chicago; "Reports of Cases," by Dr. S. C. Plummer, of Chicago; (a) Strictures of the Esophagus following Typhoid Fever; (b) Colloid Carcinoma of Cecum; (c) Penetrating Wound of Liver; (d) Gastro-Enterostosis; "Practical Remarks concerning When and How to Treat Septic Pelvic Affections of Women by Vaginal Incision and Drainage," by Dr. Fernand Henrotin, of Chicago; "Symptoms on Surgery of the Nervous System;" (a) Diagnosis and Pathology of Neoplasms of the Brain, by Dr. Hugh T. Patrick, of Chicago; (b) Surgery of Cerebral Neoplasms, by Dr. L. L. McArthur, of Chicago; (c) Insanity Following Skull Injuries, by Dr. E. Mammen, of Bloomington; (d) Cerebral Infection from Middle Ear Disease, by Dr. Norval H. Pierce, of Chicago; (e) Pathology and Diagnosis of Lesions of the Spinal Cord and Peripheral Nerves, by Dr. Frank P. Norbury, of Jacksonville; (f) Surgery of the Spinal Cord and Peripheral Nerves, by Dr. J. B. Murphy, of Chicago; Discussion opened by Dr. Archibald Church, of Chicago: "Plastic Surgery of the Trachea," by Dr. Albert I. Bouffleur, of Chicago; "Pelvic Deformity due to Congenital Dislocation of the Hips and Cesarean Section," by Dr. C. E. Paddock, of Chicago; "Infectious Urethritis of the Non-Gonorrhreal Type," by Dr. P. Kreissel, of Chicago; "Prophylaxis of Syphilis," by Dr. Alfred Schalek, of Chicago; "Perigastric Adhesions after Gallstone Operations: Their Surgical Importance, and a New Operation for their Relief," by Dr. E. Wyllis Andrew, of Chicago; "Are Cases Demanding Removal of the Eye of Interest to the Surgeon and Physician?" by Dr. J. Brown Loring, of Chicago; "Some Considerations Relative to Phlegmon of the Orbit," by Dr. Charles H. Bard, of Chicago; "The Indications for Opening the Mastoid Process in Cases of Empyema of the Cells Following Acute Otitis Media, where there is an Absence of Signs over the External Surface of the Mastoid," by Dr. George E. Shambaugh, of Chicago; "Symposium on Laceration of the Obstetrical Canal, Resulting from Obstetrical Injuries;" (a) Pathological Anatomy, by Dr. J. Clar-

ence Webster, of Chicago; (*b*) Causes and Prevention, by Dr. F. H. Kimball, of Rockford; (*c*) Diagnosis and Treatment of Rupture of the Uterus, by Dr. George Schmauch, of Chicago; (*d*) Lacerations of the Vaginal Portions of the Uterus and Forix Vagina, by Dr. L. H. Nickerson, of Quincy; (*e*) Diagnosis and Treatment of Lacerations of the Vaginal Body, and of the Peripheral Region, including the Pelvic Diaphragm, by Dr. C. S. Bacon, of Chicago; Discussion opened by Dr. Joseph B. De Lee, of Chicago: "The Value and Place of Duodeno-Choledochotomy in Gallstone Surgery," by Dr. John C. Hancock, of East Dubuque; "Post-Operative Complications," by Dr. Daniel M. Eisendrath, of Chicago; "Pelvic Infections in Women," by Dr. Thomas J. Watkins, of Chicago; "Inversion of the Uterus, with report of cases," by Dr. P. L. Markley, of Rockford; "Bronchoscopy for Removal of Foreign Bodies from the Air Passages," by Dr. E. Fletcher Ingals, of Chicago; "Acute Dilatation of the Stomach," by Dr. A. E. Halstead, of Chicago; "Tuberous Subchorial Mematomata of the Decidua," by Dr. S. R. Hopkins, of Springfield; "Intussusception in Infancy and Childhood, with collection of 1,028 cases, with Statistics," by Dr. J. H. Hess, of Chicago.

OBITUARY.

Dr. ALBERT A. DAVIS died May 6, 1905, at his home, No. 149 East Sixty-third Street, New York. He was graduated from the College of Physicians and Surgeons in 1864. Dr. Davis was a member of the Academy of Medicine and the County Medical Society, and an alumnus of St. Luke's Hospital.

Dr. WILLIAM HAMMOND, a pioneer physician of San Francisco, died May 4, 1905. He was a native of Maryland and eighty-three years of age. He was an uncle of John Hays Hammond and William Hammond Hall. At the time of the famous Terry-Broderick duel, he officiated as one of the surgeons.

Dr. WILLIAM EDWARDS, Superintendent of the Michigan Asylum for the Insane, died April 26 at the University of Michigan Hospital at Ann Arbor of heart trouble. Dr. Edwards was born near Peru, Ind., in 1856, and graduated from the University of Michigan Medical Department in 1884, and was that year appointed to the staff of the Michigan Asylum. In 1891 he was appointed Superintendent.

Dr. OLIVER WOODSON NIXON, for many years associated with *The Chicago Inter-Ocean* as literary editor, died May 9, 1905, at Biloxi, Miss. Dr. Nixon was a member of General Pope's staff, having been medical director of the army of Missouri. He established *The Evening Chronicle* in Cincinnati in 1870, and with his brother, William Penn Nixon, consolidated it with *The Cincinnati Times*. The two brothers joined in 1878 in the purchase of *The Inter-Ocean*. Dr. Nixon was the author of several books.

Dr. HERBERT N. HOOPLE, a specialist on the eye and ear, and author on those subjects, died at his home in Brooklyn, on Monday night, May 8, 1905. He was born in Wales, Ontario, in 1856, and was graduated from Victoria College, Coburg, in 1878, and from the medical department of Toronto University in 1885. He was connected with the Williamsburg Hospital, the New York Eye and Ear Infirmary and the Methodist Episcopal Church Home. He was a member of the British Medical Association, the Long Island Medical Society, the Associated Physicians of New York and the Brooklyn Medical Society. Dr. Hoople had been for a number of years a contributor to the columns of the MEDICAL News, having had supervision of the Department of Diseases of the Eye and Ear.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

LONDON, April 29.

THE TUBERCULOSIS PROBLEM—THE KING'S SANATORIUM—VITAL STATISTICS OF ENGLAND AND WALES—CANCER CURING IN LONDON—MUNICIPAL CHILD REARING—DENTISTS FOR THE NAVY—THE NEW PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS.

AN earnest endeavor is being made to induce our metropolitan sanitary authorities to grapple seriously with the tuberculosis problem as it presents itself in London. On April 15 a deputation representative of all the principal societies and associations concerning themselves with the public health waited on the Metropolitan Asylums Board, which is the chief authority in London in the matter of infectious diseases. The deputation submitted a memorial in which it was stated that between 7,000 and 8,000 persons die every year in London from pulmonary phthisis, the mortality in the male sex being 40 per cent. greater than in the female, and that a much larger number of persons suffered from ill-health arising from the same disease. It was pointed out that the existing provision of hospitals in London for pulmonary phthisis is utterly inadequate. While the deaths in London in 1904 from the diseases admissible to the Board's hospitals (smallpox, scarlet fever, diphtheria, and fever) aggregated only 1,415, the deaths from pulmonary phthisis alone, exclusive of all other tuberculous diseases, were 7,738, and of these a vast proportion were deaths of adult men and women. The money value to the community of the lives lost every year from this preventable and curable disease was enormous, and immensely transcended any possible cost to the rates by sanatorium provision. Dr. T. Orme Dudfield, ex-president of the metropolitan branch of the Incorporated Society of Medical Officers of Health, said that one-third of the deaths which annually occurred in London from phthisis took place in Poor Law Institutions. The matter was brought to the attention of the Board in 1902, but its consideration was delayed for 12 months on the ground that there was not at that time a general consensus of opinion among the metropolitan authorities in favor of their undertaking the treatment of consumptive patients. It was now contended that such a general consensus had been attained, and that the time had come for action, and the deputation therefore asked the Board to apply for the necessary powers.

The speaker said there was reason to believe that such an application would not be made in vain, as the Local Government Board was known to be generally favorable to the proposal. The deputation desired hospitals in the first instance for cases in the earlier and hopeful stages of the disease, and refuges for incurables dangerous to others, provided by guardians at the parochial infirmaries, and ultimately, if desired, by the Metropolitan Asylums Board. The cost of maintenance would, it was estimated, be not more than \$5 per week per patient, and, assuming that there were 2,000 beds which would enable the managers to take in 4,000 cases a year, the annual cost would be \$650,000. If the Board would comply with the prayer of the memorial he felt sanguine that the next forty years would see consumption far on the way to total extinction. Sir William Broadbent, representing the National Association for the Prevention of Consumption and other forms of Tuberculosis, said there was probably about 40,000 or 50,000 people suffering from tuberculosis in London, and of that number 8,000 or 10,000 had the disease in its

early stage, which could be dealt with by sanatorium treatment, with a probability that a large proportion would be restored permanently to health. His hope was that the Board would constitute itself the authority for dealing with tuberculosis as a whole. By dealing with advanced cases they could intercept the disease at its source. Apart from that, if the Board were the tuberculosis authority, it would obtain the cooperation of the medical officers of health, the Poor Law medical officers, and the special hospitals, and they would obtain for the first time a real census of tuberculosis in London. Palaces were not required for dealing with the earlier cases of consumption; bungalows and huts and slightly-built hospitals were all that were required. There were dotted all over London thousands of children who were being made cripples by surgical tuberculous disease of the spine, of the joints, and the like. There was no class of disease which yielded more readily to open-air treatment than surgical diseases of children, yet they were left almost without any resources. The managers were assured beforehand of the cooperation of the Poor Law authorities, who were only too anxious to obtain the Board's assistance in dealing with consumptives, segregating such as could be removed from their homes, isolating, to some extent, those who had to be left in unfavorable surroundings, and securing that the sputum, which was the great cause of disease, should be destroyed. The Board could deal with cases from a different point of view from that of the ordinary hospitals. It would receive patients, not specially for the good of the individual, but for the advantage and protection of the community. It would have a right, therefore, to make its own conditions of admission. It would not receive patients and allow them to leave just when they liked, and thus waste the money which had been spent on them by returning prematurely to their homes and work. It would insist upon the power of dealing with them as long as the medical authorities considered it necessary.

The chairman of the Board expressed the greatest sympathy in the object which the deputation had at heart. The main difficulty was that of expense, and it was satisfactory to be assured that the capital expenditure necessary would not be very excessive. But the question still remained whether the public and rate-payers of London were sufficiently educated and acquainted with the great wants of the tuberculous portion of the population to induce them to give a ready assent to the payment of increased rates for the purpose of providing the sanatorium accommodation required. He promised the deputation the most earnest consideration of the facts which had been laid before the managers, and expressed the hope that the day would soon come when they would see their wishes carried out, whether it were by that Board or through some other body. This may be regarded as the first step in a movement which, it may be hoped, will have the most far-reaching consequences. The State has hitherto simply refused to face the tuberculosis problem, and whatever has been accomplished has been due to private philanthropy and in a much smaller degree to municipal enterprise. So far, practically nothing has been done except in the way of preparing for the campaign. The time has now come for the forces to take the field. But a man is wanted like the elder Carnot, to "organize victory." And it is certain that nothing will come of it all unless the State takes the matter seriously in hand.

The King's Sanatorium, which is being built at Midhurst in Sussex with the million dollars given by Sir Edward Cassel, will, it is announced, be open in the early part of next year. It is high time that some solid

result of the enthusiasm excited by the gift should become visible. The Advisory Committee to whom the King delegated the execution of the scheme have been so dilatory that it is not surprising to hear that he has expressed his opinion in terms of flattering. He is said indeed to be sick of the whole subject of tuberculosis, and to have declared that the movement, to which on its inception he lent his august countenance, is a piece of humbug. This, if true, is probably nothing more than a momentary ebullition of royal temper.

Strange rumors were current some time ago that a German physician from Falkenstein was to be the medical superintendent of the new sanatorium, the reason alleged for the choice being that he had been recommended to the good graces of the king by a lady of quality in whose eyes the doctor had found favor. There was nothing intrinsically improbable in the story, for Edward VII, who speaks with a German accent, has a natural liking for Teutons—there are two on the Advisory Committee—and he is besides notoriously open to female influence. The appointment would assuredly have aroused great indignation in the medical profession of this country. The agreement with the German physician was, it is understood, actually signed, but at the last moment it seems to have been borne in upon those responsible for the selection that the appointment of a foreigner would be regarded as an insult to native talent, and a young Englishman, Dr. N. D. Bardswell, who has had some experience in the management of sanatoria, has been chosen for the post.

The Registrar General's annual summary of the vital statistics of England and Wales was issued on April 26. The figures show an increased death-rate and a reduced birth-rate. The total population of the seventy-six large towns with which the summary chiefly deals, is estimated at 15,271,287, and the birth-rate is returned at 29.1 per thousand, or 0.6 below that of 1903; the crude death-rate was 17.2, or 0.9 more than that of 1903. The birth-rate for the whole country is given as 27.9 and the death-rate at 16.2 per thousand. The chief epidemic diseases carried off 2.49 per thousand, the highest rate, 4.66, being at Liverpool. As to infantile mortality, Hornsey comes out with the lowest figure, 87 per thousand, and Burnley with the highest, 229. In London, the marriage rate was equivalent to 17 per thousand, a falling off amounting to 0.5 as against 1903, and 0.9 below the average for the past ten years. Births were 27.9, or 0.6 below 1903, and 1.7 lower than the ten years' average; at the same time the births of wedlock rose from 37 to 38 per thousand. The death-rate of London was 16.6 per thousand, being 0.9 above 1903, which was the lowest on record, but 1.7 below the decennial average. Infantile mortality accounted for a rate of 146, as compared with 131 in the previous year, and 154 over the ten years. In nearly all the principal diseases the mortality decreased, the "net saving of life" in 1904, as compared with the ten-year period, being 7,904. The chief excesses occurred in diarrhoea, 1,194 persons, pneumonia 415, and cancer 408, while suicide accounted for an addition of 22. Statistics are also given in regard to 142 smaller towns, which had a birth-rate of 27.5 and a death-rate of 15.6 per thousand.

M. Doyen, sighing like Alexander for a fresh world to conquer, has cast his eyes on this small but wealthy island and is determined to make it tributary to his scalpel. For some time the "yellow" newspapers have been preparing the way for his advent. Now it is definitely announced that "the famous French specialist" has decided to open an institution in London for the treatment with his serum of patients suffering from cancer. A house, with accommodation for forty patients has

been taken in St. John's Wood, a suburb hitherto looked upon as a grove sacred to Venus Vulgivaga. There patients will be treated under the same conditions as in the mother-house in Paris. Mr. Croker, who is suing M. Doyen for the return of a fee of \$20,000, may be interested to read the following obviously inspired utterance: "It is understood that the fees charged will somewhat define the limit of Dr. Doyen's work, since, were treatment gratuitous, the demand upon his services would be a serious barrier to his work. For this reason the Paris institution accommodates no more than about one hundred sufferers." Doubtless, there will be a rush for places in the new temple of healing. For the comfort of those doomed, like the Peri of the poem, to look into the gates of Paradise without being able to enter, it is added that "for the benefit of those who cannot be accommodated in the new home, the doctor will, on special days each month, be available in London for consultation, and this is the second part of his scheme, which will, of course, involve continual journeys from Paris." It is likely enough that M. Doyen's commercial enterprise will be as successful here as it has been in Paris. There is a trifling difficulty in the way: he is not legally qualified to practise his profession in this country. It is suggested that the Royal College of Surgeons may come to his rescue by conferring upon him its Fellowship, which is the highest surgical diploma in this country. The College is rather an old-fashioned body, however, and its views on professional ethics are not sufficiently up-to-date to enable it to appreciate M. Doyen's methods of making his discoveries and achievements known to the world. He may perhaps find some other of our numerous licensing corporations more compliant, but it is doubtful whether an honorary diploma granted by any of them would confer the right to practise. Nevertheless, *il est avec les dieux des accommodements*, and doubtless the difficulty will be got over or evaded somehow.

The Huddersfield Corporation, which has been a pioneer of municipal reform in several directions, has made a new departure by adopting a scheme of municipal child rearing. It is noteworthy that the scheme owes its initiative to the Mayor, who is a brother of Sir William Broadbent, Physician-in-Ordinary to the King. Deeply impressed by the waste of child life in the manufacturing town, he offered \$4 to every infant born in the district of Longwood on its attaining the age of twelve months, the offer to run during his mayoralty. This opened the eyes of the health authority to the possibilities of successful child-rearing. They recognized that the strength of the town was in its labor, and that if the children were strong and healthy at the age of twelve months the great majority would grow to be strong and healthy men and women. A scheme was accordingly drawn up and adopted by the corporation at a meeting on April 26. In the first place, it provides for the payment of 1s. to the first person who shall notify the birth of a child to the medical officer within forty-eight hours of the event. The medical officer is instructed to draw up for circulation among parents detailed advice to mothers as to the feeding, washing, and clothing of the babies. He is also to draw special attention to the subject of infantile mortality. Moreover, lady health visitors are to be appointed, who shall go into the houses in which births are reported and instruct the mother as to the nursing and rearing of the babies. They will make inquiries where a death is recorded, investigate cases of illness among school children, and inspect workshops where females are employed. An important adjunct is the establishment of a day nursery. This is to be experimental, and at the end of twelve months, if it proves all

that is hoped of it, a proposal to make it permanent will be submitted. At the nursery milk will be supplied specially for feeding infants under one year of age.

A step toward a much needed reform in the provision for the physical efficiency of the men serving in the Royal Navy has just been taken by the Admiralty. A dental surgeon has been appointed to look after the dental apparatus of the sailors and marines at Portsmouth. This is the first appointment of the kind ever made. It is an experiment, but if the result is considered satisfactory the arrangement will be made permanent, and will doubtless be extended to other ports and naval stations. The dentist is to rank as a civil servant, not as an officer of the medical service of the navy; consequently, he will not wear uniform. In connection with this subject it may be mentioned that the War Office scheme for providing soldiers with artificial dentures has proved a dismal failure. Soldiers for some reason will have nothing to do with them, and intending recruits are deterred from enlisting when it is suggested that they should wear them. The proportion of rejections for bad teeth is very high, and if our future warriors persist in refusing the aid of art to supply the defects of nature, it appears likely that the British lion will before long be unable to show his teeth to those who threaten his repose, because "in point of fact," as Cousin Feenix says in *Dombey and Son*, "he will have no teeth to show."

Sir Richard Douglas Powell, who has just received the highest honor which can be conferred on a consulting physician by his brethren here, by being elected President of the Royal College of Physicians of London, is sixty-two years of age. He was a pupil of Sir William Jenner and is a graduate of the University of London. He is regarded as a first-class authority on lung diseases, on which he has written several valuable monographs. He was Physician-in-Ordinary to the late Queen Victoria and is Physician Extraordinary to the present King. He is an example of the best type of consulting physician, and will make an ideal figurehead for the most dignified of our medical institutions. Sir William Broadbent, who ran Sir R. Douglas Powell close on the first vote, has been unsuccessful on several previous occasions. There is a section of the Fellows of the College which looks askance at the part he has taken in the movement for stamping out tuberculosis, as if it were defilement for a physician to be associated with a public effort for the general good?

OUR PHILIPPINE ISLANDS LETTER.

INDIFFERENT ATTENDANCE TO MEDICAL MEETINGS—THE HOSPITAL FOR LEPROS AND CONTAGIOUS DISEASES—CAREFUL SUPERVISION OF THE BOARD OF HEALTH—ENORMOUS INFANT MORTALITY—THE PROLIFEROUS FILIPINO—FILTHY SURROUNDINGS OF THE NATIVE.

To the Editor of the MEDICAL NEWS.

DEAR SIR: We were disappointed at both the third and fourth meetings of the Medical Association in not hearing a number of important papers, which, owing to the enforced absence of the authors from Manila, were read by title. One of these was the paper by Dr. Wilkinson, the director of The San Lazaró Hospital. Through the kindness, however, of his first assistant, Dr. Biggar, I was shown everything of interest there. This is the hospital where the insane and those with infectious disease are confined. The building was an old Spanish hospital which has been put in excellent condition and serves its purpose excellently. Here you will be shown those cases of leprosy which have been found in Manila only—there are at present some 280 of these unfortunates. It seems that the effort toward

a general rounding up of all cases of this disease in the islands is progressing slowly, owing to the delay in getting ready the Leper Colony Island; such as there is in Honolulu. Such a segregation for these sufferers is devoutly to be wished. While everything is done for their comfort at San Lazaro, the enforced confinement so much of the time does not lessen, what to the passing observer, seems an absolutely unbearable plight. Dr. Biggar tells me they have been using X-ray on some of the cases and with really remarkable results. I mean that in several instances the elephantiasis of the nose, ears, and face has practically disappeared. Whether this improvement would be permanent he could not say. There is no reason, up to this time, to believe that the X-ray effects any systemic improvement.

It is interesting to note that, for this particular congregation of lepers at least, all of the deaths are due to pulmonary tuberculosis. There are many curious contradictions about this dread disease. Dr. Bigger told me the following history of leprosy in one family; father and mother are healthy, well-to-do, and educated metizos. To these parents were born ten healthy children. In a certain period of years five of these children, that is, two daughters and three sons, became leprosy and at present two sons are in the San Lazaro; the other brother and both sisters having died there. The five other children are perfectly well. How five out of the family became infected is not positively known.

From the leper wards we went to the separate pavilions for smallpox, bubonic plague, tetanus, cholera, etc. I was fortunate in being able to see a case of plague, which had been discovered the day before. While there were four cases of this disease in Manila during the ten days of our stay, it must not be supposed that it is any longer a daily occurrence. It is safe to say that the health authorities have this dread scourge entirely under control and, as Dr. McDill said, the occasional case as reported, excites hardly a passing comment. Making its appearance late in 1899 it continued with varying intensity for five years; since 1904 only sporadic cases have appeared from time to time in Manila. I am informed that it had never been transported to any extent in the outlying districts.

This remarkable result is due to the splendid work of the board of health and its officers. The crusade against rats, which so infested Manila, was begun early in the fight and for months and months over thirty thousand rats per month were killed; at the present time upward of twenty thousand is the average. This naturally brings up the question, to what extent are rats, through the medium of fleas, the source of infection. In the first place it is known that it is fleas from the large brown rat only which do infect the human being. It is interesting to note in this immediate connection, that the vegetable organism, the poison of the plague, has been found in the stomach of the flea, but it has not been traced from that organ to and through the ejecting apparatus of the flea. Whatever the rôle played by fleas in the spread of plague, it is generally conceded that there are other sources of infection.

In Circular No. 9,276, issued by the Board of Health, Manila, 1903, the following sources of infection are given: (1) From a previous case. (2) From an infected locality (through skin lesions). (3) From fomites. (4) From rats and fleas, by conveyance. (5) From sputum, urine (not always), feces, sweat (only when skin is infected), and blood (only in late stage, not always) of infected individual. Infection from convalescent case may occur after three weeks, and can after seventy-two days, occasionally.

The health officers did not confine their efforts to the destruction of rats but at once started preventive inoculation on a large scale. In this fight Shiga's serum, prophylactic and curative, has been chiefly used. These serums are made in the Government Laboratory in Manila, and have been used with much satisfaction during these years. In over ten thousand inoculations in Manila in the last three years, not one has resulted unfavorably. This protection has been especially marked among the Chinese. Formerly the largest number of cases were among the Chinese but owing to thorough and repeated prophylactic inoculation they are less often affected than other inhabitants. Dr. Marshall tells me that this happy result has been greatly aided by the cooperation of the great Chinese societies. Speaking of the Chinese residents of Manila, of which there are some twenty-two thousand, I am reminded of a very interesting paper read at the meeting by Dr. Tee Han Kee, on "Chinese Medicine." Dr. Kee is associated with the board of health. In this paper he told us that modern medicine was slowly, very slowly indeed, but none the less surely, making headway in his native land. In Manila I am credibly informed that these conservative folk employ the regular licensed physicians, greatly to the exclusion of their own herb doctors.

There has been no cholera in Manila since February, 1904 (or in the Provinces since April of that year). From the date of its appearance in March, 1902, to April, two years later, there were in Manila 5,581 cases with 4,386 deaths, and in the provinces (where by the way it did not develop until a month later) 160,671 cases with 105,075 fatal.

The extraordinary and successful efforts of the Board of Health in stamping out this dread disease deserve the highest meed of praise. Dr. C. E. Carter, Commissioner of Public Health, speaking in general of cholera, its prevention and extinction, gave it as his opinion that quarantine and also detention camps were of little if any use; the epidemic will cease when material is used up; the poor must have special attention; the naked truth should be told as soon as cases appear; no treatment is satisfactory, though intestinal antiseptics promises well; all water should be boiled and no uncooked food indulged in; and, finally, the stomach should be kept acid by the drinking of lemonade, lime juice or water containing a little diluted hydrochloric acid, since cholera spirilla cannot live in an acid medium. The water supply should be carefully guarded and the drains, latrines, cesspools and any filthy localities cleaned and disinfected.

With reference to "Protective Inoculation Against Asiatic Cholera," Dr. Richard P. Strong, the Director of the Biological Laboratory, Manila, in a most exhaustive study of the question (see Circular 20,230, Bureau of Government Laboratories), says, "By the subcutaneous injection of the cholera prophylactic an excellent cholera immune serum can be obtained in human beings . . . however the question arises . . . are they really immune to Asiatic cholera?" In his opinion, experiments upon animals cannot satisfactorily answer this question, and the answer can be given only by a practical observation of the human beings inoculated with the serum during a severe and general epidemic. Quoting the work of Haffkine, in India, and of Muraka, of Japan, he says, . . . "it would appear that simply by the injection of a small amount of the killed organisms a certain degree of immunity against the natural mode of infection is acquired."

Dr. Strong concludes his most important contribution as follows: "By the autolytic digestion of care-

fully killed cholera spirilla in an aqueous fluid, the receptors become separated from the bacterial cells and may be filtered off in solution . . . the subcutaneous injection into man of such free receptors is . . . free from any danger and produces only slight general reaction and . . . hence the method is a practical one for producing a cholera immune serum in man."

This is indeed a consummation devoutly to be wished. A prophylactic serum for this terrible enemy of man would seem to be in sight.

In the San Lazaro Hospital were but two cases of smallpox. But they served to call attention again to the splendid work done by the Board of Health in limiting this disease to a few sporadic cases a month. Inspection, vaccination and revaccination are done in the most thorough way; hundreds of thousands of vaccinations being done each year. The card system of registration and identification, introduced, I understand, by Dr. Marshall, could not be improved upon.

After viewing several cases of beriberi, which is not looked upon with alarm in Manila, and which seems quite amenable to treatment, we drove to the municipal hospital for the treatment of women of the town who have become infected with venereal disease. This is a most interesting solution of this wretched and vexed question and will be described in my next letter.

Another subject, which has been giving those in charge of the health of Manila and these islands much hard work, is the fearfully high infant mortality; taking the figures for last October, we find that of the total of deaths, 1,093, not less than 642 were infants under one year. The rate is always between 60 per cent. and 70 per cent.

To the callous looker-on this really appears a blessing in disguise; the Filipinos are amazingly productive and the men, so Dr. Carter tells me, bestially sensual. Of a total of 740 births reported in Manila for last October, no less than 718 were Filipinos. I said "a blessing in disguise." It is all very well to prate of "The Islands for the Filipinos," but if civilization is ever to reign here it will, through the preponderance, and a mighty preponderance at that, of the native-born American; so that, while a high infant mortality may not be encouraged on moral and esthetic grounds, it certainly may, for economic reasons and because it means the greatest good of the greatest number.

However, like real good Christians, the health officers are active in trying to better the conditions under which the Filipino baby is born and by which it is surrounded. They are telling the mothers not to treat the cord with "ashes or brown paper," experience having shown that such practices are the great source of tetanus, erysipelas, septicemia, etc.—diseases which carry off so many children in the first thirty days. They are trying to teach the necessity of cleanliness (a somewhat vain endeavor your critic would asseverate); they issued a list of instructions to prospective mothers of future Aguinaldos, in which they are told; "Under no conditions must the baby be allowed to live, as is the custom in towns and barrios, with the animal in the house." Apropos of this habit of the mothers of future rulers of this land, a pamphlet before me adds: "In many places, the pig, the dog, and the chickens form a part of the household from nightfall to daybreak."

The overworked Board of Health tells the mother that "it is barbarous and pernicious, the practice of applying to the child the shell of the cocoanut sharpened and heated red hot, as is so frequently done to overcome convulsions." . . . "By all means avoid the nasty (I do not think the Filipino has any such word in his language) custom of rubbing the vaccination sore

with 'patis' of fish broth or with the juice of tomatoes, etc." . . . "Juices, sirops and decoctions of plants, so commonly used, must be avoided." And finally, mothers are implored "to forever desist from the custom, inveterate in the Philippines, of prematurely feeding the child with inappropriate food, as rice, sauces and broths, sweets, and mixed dishes, fruits and bits of meat, and food previously masticated by adults."

And here we leave this important matter. I have given you the above quotation to show about how far we have not brought these people in the advance to Godliness through cleanliness.

Manila, March 1, 1905.

SOCIETY PROCEEDINGS.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held February 8, 1905.

SYMPOSIUM ON GASTRIC ULCER.

The President, James M. Anders, M.D., in the Chair.

Etiology and Pathology.—Dr. Joseph McFarland concluded that two factors, one incidental and one essential, are engaged in the etiology of gastric ulcer. The incidental factor is the gastric juice, containing the proteolytic serum without which the formation of gastric ulcer is impossible. The essential factor is a loss in the natural immunity of a circumscribed portion of the gastric mucous membrane, in consequence of malnutrition, resulting from thrombosis, embolism, traumatic injury and the other obstructions of the minute nutrient vessels in the gastric wall, or their infections or toxic agents circulating in these vessels. The relation of anemia to gastric ulcer, he thinks, quite as probably secondary and primary, that is, instead of the anemia being the cause of the disease, he thinks it quite as likely to be its effect.

Incidence in Philadelphia.—Dr. Albert Philip Francine analyzed the post-mortem records of the Philadelphia Hospital for ten years from January 1, 1893, to December, 1903, inclusive, and based the following conclusions upon the result of his studies: Total number of autopsies in ten years, 2,830. Those in association with chronic nephritis, 16 gastric and 1 duodenal; with tuberculosis, miliary, or of the lungs, 11 gastric and 1 duodenal; in association with both tuberculosis and nephritis, 3 gastric; with chronic bronchitis 1 gastric; with pneumonia 1 gastric; atelectasis of lung, 1 both gastric and duodenal; with carcinoma of stomach or elsewhere, 4 gastric; with fatty heart, 1 both gastric and duodenal; with enterocolitis in infants, 2, both gastric. In 20 out of 42 cases, or 0.47 per cent., the ulcers were multiple. Mayo says that in 20 per cent. of cases more than one ulcer is present. The sexes in Dr. Francine's series were equally divided. The average age for males, forty-three years; for the females, the same. Welch found forty per cent. in males and sixty per cent. in females. The largest number of cases in his series occurred in males between twenty and thirty years. In Dr. Francine's series the greatest number of cases occurred in males (5) between fifty and sixty years and in females (5) between forty and fifty years. Three of the cases were in infants, ten, twenty and thirty-six months old. Dr. Osler mentions a case reported by Goodhart in an infant thirty hours old. The largest ulcer in Dr. Francine's series was 9 cm. to 10 cm. by 8 cm. to 10 cm. He quoted Dr. Joseph Walsh, late Pathologist to the Henry Phipps Institute, as saying that

during his services in 1903, that there were fifty-two autopsies on those dead of tuberculosis and that in one case he found numerous small superficial ulcers in the stomach. In the service of the following year, of fifty-five autopsies there were no instance of gastric or duodenal ulcer.

Symptomatology and Diagnosis.—Dr. Campbell P. Howard, of Baltimore (by invitation), read a paper upon this feature of the subject. The mode of onset in the majority of cases, he said, is gradual and insidious. In the smaller group hematemesis and perforation are sudden. In acute gastric ulcer blood is vomited. In the chronic form, pain, vomiting and hematemesis are cardinal symptoms. In every of gastric ulcer there is some hemorrhage, though it may not appear for months or years after the onset. The physical examination is negative in many complicated cases, except that tenderness is present. The most frequent secondary complications are hypertrophy of the pylorus, adhesions and inverted viscera. Dilatation of the stomach in an ulcer case, he said, signifies pyloric obstruction. Few diseases present more difficulties in diagnosis.

Medical Treatment.—Dr. F. P. Henry presented this part of the subject. That the tendency of gastric ulcer is toward recovery Dr. Henry said is proven by the frequency of characteristic cicatrices in the stomach post mortem. The object of treatment should therefore be to assist Nature, and the most important indication he considers to be rest, both general and local. The latter is best secured by rectal feeding plus bland and nutritious articles of diet. Opium and its preparations per os are conducive to rest by allaying pain and peristalsis and blunting appetite. Hyperacidity should be counteracted by lime water and bismuth rather than by sodium bi-carbonate which, on account of the evolution of gas attendant on its administrations might distend the stomach to a dangerous extent. Milk, raw, boiled or peptonized, he considers the best article of diet in early stages. Buttermilk is sometimes an excellent succedaneum. The formation of tough coagula may be prevented by mingling the milk with a little well-boiled flour or arrowroot. Medicinal treatment he regards of secondary value to dietetic, but doubtless serviceable. He recommends bismuth subnitrate in large doses suspended in barley water or mucilage. Nitrate of silver he believes to be useless, and calomel injurious and interfering with healing processes. Carlsbad water and Carlsbad salts he finds useful as antacids and laxatives. When chlorosis is present iron albumin prepared extemporaneously by mingling a solution of sesquichloride of iron with "egg water" is recommended. Leube's method of treating gastric ulcer by continuous poulticing was discussed. Leube's statistics founded on 556 cases give a mortality of 2.2 per cent. instead of 13, which is the percentage under ordinary methods. Dr. Henry's method is a modification of Leube's in that he uses opiates which Leube condemns, and nourishes by rectal enemas during the preliminary week of the medical treatment.

Surgical Treatment.—Dr. William L. Rodman considered the surgical treatment of gastric ulcer. This, he stated, resolved itself into treatment of the ulcer itself and of the several complications. He believes that perforation is far more common than is thought. The treatment of hemorrhage is generally medical, but if there is shown a recurring feature the treatment should be surgical. The treatment of stricture or hour-

glass stomach is a question of physics and not of chemistry and should be generally by operation. Uncomplicated gastric ulcer in the vast majority of instances he believes can be treated by medical means. He referred to the various surgical methods for the treatment of gastric ulcer, and concluded that one should operate only after medical means have been fairly tried for at least four weeks without results. Then the abdomen should be opened, but without any positive conviction of what should be done until the stomach is examined from the pylorus to the cardia, after which the procedure best adapted to the conditions present should be carried out.

Dr. Alfred Stengel agreed with Dr. Howard that it is possible to distinguish between the acute and chronic form of ulcer, but believed that this is a clinical rather than a pathological differentiation. Chronic forms of ulcer impress him as being simply of the indolent type, with the same general pathological basis and nature as the acute, but with different local conditions, which cause their different course. Statistics would be much clearer if all the cases were based upon a pathological study after careful discrimination between the different types of ulcers, and erosions, which ought not to be called ulcers. In treatment he agreed with Dr. Henry that gastric ulcer is a medical disease, unless resistance shows that medical treatment will not avail. After a consideration of the principal symptoms of gastric ulcer hematemesis pain and dyspeptic disturbance Dr. Stengel believes there is a considerable proportion of cases in which the diagnosis must be in doubt. He thought the frequent association of gastric ulcer with nephritis and tuberculosis, shown by Dr. Francine in the statistics of Blockley, might be accounted for by the character of the patients in that hospital.

Dr. John H. Gibbon believes that many cases of gastric ulcer that recover after operation do so because of the after-treatment, and he agrees with Dr. Stengel that the patient should be fed by the bowel for three weeks. He referred to the fact that often in the presence of gastric symptoms and a palpable tumor in the abdomen there is the belief that malignancy is present and a wrong prognosis is therefore given. In all such cases where there is the slightest question of doubt he advises exploratory operation.

Dr. Lambert Ott found that the administration of 5 grs. of nitrate of silver in 6 ozs. of water, a tablespoonful in a wineglass of water half an hour before meals, gave good results. He does not approve of boiled milk as a dietary, but has accomplished the best results in using as a food milk, as a basis, with various kinds of broth.

Dr. Joseph Sailer said that the rather small percentage of gastric ulcer in this country suggested the possibility of the conditions being overlooked by pathologists. He thinks the most important element in treatment is absolute rest. Reports of different men show practically the same results whether feeding is by the mouth or rectum. Personally he prefers the latter method. After commencing alimentation by the mouth he suggests that olive oil and some of the bland nutriments may be given without harm to the mucous membrane of the stomach. Dilute solutions of protargol through the stomach tube have given a sense of temporary alleviation. He considers that the entire disappearance of symptoms for two or three weeks, with no blood in the stools and the patient on a liberal diet may be accepted as perfectly satisfactory evidence of recovery.

CHICAGO SURGICAL SOCIETY.

Regular Meeting, held February 6, 1905.

Dr. A. K. Steele, M.D., in the Chair.

Ankylosis of the Jaw.—Dr. Emil Ries cited the case of a boy, twenty-one years of age, who was sent to him six months after he had acquired syphilis. The patient's syphilis was, at first, treated by an irregular practitioner. The boy soon began to have ulceration of the mouth, although he did not remember ever having been salivated, and it was not known that this practitioner gave mercury. Ulceration of the mouth began, and when the boy consulted a regular practitioner, he was in a bad condition. His tongue was greatly swollen; he could not close his mouth on account of ulcerations; he lost almost all of his teeth on the left side; and large pieces of bone began to come out. One day a very severe hemorrhage from the mouth occurred, which the doctor had difficulty in controlling. Under antisyphilitic treatment his condition improved, so that the tongue retired into the mouth and the patient was able to close the mouth. Very soon, however, he found that while before he was unable to close his mouth, now he was unable to open it. The teeth on the left side having largely fallen out, he was able to feed himself on that side with a spoon, taking liquid food only. Part of the liquid food always escaped through the nose, so that feeding was rather difficult. At first, nutrition was very poor; patient decreased in weight rapidly, but gained under antisyphilitic treatment and careful feeding, so that when he came to Chicago in November he was in fairly good general health. In October, when the speaker first saw him, he still had syphilitic ulcerations in the mouth, which did not heal quickly, and directions were given for specific treatment. When he returned in November, he could not move the lower jaw; half of the horizontal ramus on the left side had disappeared, with the angle of the jaw. Between the condyloid process and the jaw there was only ligamentous union by cicatricial tissue. The median line of the lower jaw corresponded vertically with the left nasolabial fold, the jaw being pulled over to the left side. There was a perforation of the hard palate, with perforation of the septum. There were condylomata on the penis; the chancre was still hard; the glands were enlarged all over the body; but there were no mucous patches; no eruption on the skin. It seemed that the boy was as much troubled by the bad mutilation of his face in consequence of the absence of the angle of the jaw as by his inability to open his mouth. He desired very much to have something done for the caving-in of the left side of his face, and in determining upon the method to be followed in the operation, the speaker took that into account, and instead of making an incision along the zygoma, as would ordinarily be practised, he decided to do an operation which would permit him to insert a sufficient artificial support for his face to make the left side correspond more to the other side. He intended to insert sufficient ivory pegs to give the appearance of a natural jaw. He, therefore, made an incision below the horizontal ramus, or where it ought to have been, and continued it up between the ascending ramus; then dissected his way down to the bone and to the cicatricial tissue, and dissected out the facial nerve and its branches carefully, so as to avoid wounding them. After they had been dissected out, they could be seen beautifully; he raised these parts forward, and on the left side tried to remove the condyloid process, which was firmly adherent to the skull. The coranoid process was buried in scar tissue, with the scar tissue extending down into the mucous mem-

brane of the mouth, so that he was in considerable danger of opening into the month, an occurrence which he was particularly anxious to avoid to guard against infection of the wound. He succeeded in avoiding opening into the mouth, and could resect with the chisel the condyloid process. The coranoid process, which fastened the rest of the jaw to the scar tissue, he dissected out subperiosteally. Then he expected the jaw to be fairly movable. It was not. It was just as solid as it was before. Even after the condyloid process had been removed completely, there was no possibility of moving the jaw. He therefore decided that it would be necessary to operate on the other side also, and he sutured the pterygoid muscle out between the skull and the external soft parts, so as to avoid new bony formation between the base of the skull and the jaw. He then proceeded in the same way on the right side, but it was sufficient to resect the condyloid process, as the coranoid process had not interfered sufficiently with the motion, and he again sutured the pterygoid muscle out between the skull and the rest of the descending rams of the jaw. On the left side, after having finished the dissection, he drilled holes into the jaw and inserted ivory pegs. At first, he had two pegs ready, but found that if he drilled a sufficiently good hold for the second peg, he would run considerable risk of getting into the alveolar process, and of opening into the mouth, and one could not expect pegs to hold for any length of time if they were in contact with the mouth cavity in any way. He left one peg in place, which he could insert into the horizontal ramus, and which healed in beautifully. The wounds were closed completely by sutures, without drainage, and healed by primary union. At the end of the operation it was possible to open the mouth sufficiently to insert a good-sized piece of bread, or anything of that kind, so that the boy would be able to eat solid food. In the after-treatment he insisted on early and frequent passive motion; then he began to teach the boy to speak again. His speech, when he came to him, was mumbling, very indistinct, in consequence of the formation of scar tissue in his mouth, and he actually had to relearn to speak. At the end of six weeks' treatment, his mouth was clean and all right; the wounds were all healed; his mobility was very fair, and he proceeded to have a dentist insert a plate, first of all covering the opening into his nose, the perforation of the hard palate, and secondly, to enable him to chew. He was then able to chew food, if it was not too hard, and when he left the hospital, about eight weeks after the operation, he was in good condition, and his face looked pretty natural. There was still a little caving in on the left side, but the ivory peg held up the skin so well that there was a marked apparent angle of the jaw, and the deep cavity which had existed, at first, on the left side had disappeared. Now, the peg had healed in he thought it would be an easy matter to build up with paraffin the side of the face, as there was something to build up on. The patient was going to return soon to have some more dental work done, and at that time the speaker expected to inject some paraffin. He would have preferred to have discussed the case when he had the boy present to show him to the members, but inasmuch as he had been called upon unexpectedly to report some cases, he thought this one would be of interest to the Society.

Dr. Ries also reported at length a case of extensive rectal strictures, and described the operations that were performed.

Dr. S. C. Plummer presented a case of stricture of the esophagus following typhoid fever; also a case of colloid carcinoma of the cecum.

Skiagraphs of Stone in the Kidney.—Dr. Joseph F. Smith showed skiagraphs of stone in the kidney. He passed around a print, also a negative, showing several small stones congregated in the lower pole of the kidney, and two larger stones in the upper portion of the pelvis of the kidney. The patient was operated upon and the two larger stones were found above, and the lower mass seen in the skiagraph, which looked somewhat granular, was found to consist of eight or ten separate stones, the size of a small French pea. He exhibited a negative which illustrated an interesting condition. The patient had been under the care of Dr. Billings, and it was suspected that the man had a tumor in the iliac fossa. A thickening could be felt in the region of the iliac fossa on the right side; the man had a great deal of pain; he was losing weight rapidly, and it was suggested that a skiagraph be taken of this region. On examining the iliac fossa on the right side, a circular area, two and a half inches in diameter, could be seen, which was very irregular, showing that the bone was partly excavated in an irregular manner, and a rather definitely outlined tumor probably of periosteal origin in the iliac fossa. The skiagraph showed the circumscribed nature of the tumor. Recently a patient was sent to him for a kidney stone examination. The man had been in perfect health, so far as was known, and had applied for life insurance. The life insurance examiner discovered a large amount of pus and some blood in the urine. The man had no symptoms whatever, and was surprised to be rejected for life insurance. He applied to his family physician, who took him to Dr. Kreissl, who catheterized his ureters and found blood and pus on the right side, with perfectly clear, normal urine on the left side. The patient came to Dr. Smith, who made a skiagraph of the kidney, and in two or three different skiagraphs the same shadow was seen which appeared to be a very large, irregular stone in the right kidney. This case was interesting from the standpoint that the patient had never had any symptoms, and even yet had none, and he was not aware of the fact that he had any trouble on this side. The condition was discovered accidentally.

Sarcoma which had Developed from a Uterine Myoma.—Dr. E. C. Dudley showed a gross specimen, and some slides of this case, saying it was generally understood that sarcoma might develop from any of the following structures: (1) The interglandular connective tissue of the endometrium; (2) the intermuscular connective tissue of the myometrium; (3) the walls of the blood vessels; (4) perivascular connective tissue; (5) the muscle cells; (6) any of the structures of a uterine myoma. It was evident from the gross appearances of the specimen that the sarcoma had developed from a uterine myoma. Before operation the sarcomatous structure filled the uterine cavity, and felt on intra-uterine palpation like a retained placenta. In fact, was so pronounced by two excellent diagnosticians. Microscopic sections taken from various parts of the growth showed it to be a small round and small spindle-cell sarcoma, the sarcomatous cells being substantially of the same size as the red corpuscles. The interesting features of this specimen were: (1) A rather sharp demarcation between the sarcomatous cells and the myomatous cells. (2) Presence in many parts of the sarcoma of clearly defined blood vessel walls. (3) The transition in the character of the blood vessels from those which have walls to those which are mere blood spaces. In this case complete abdominal hysterectomy was performed November 17, 1904. There was nothing unusual in the operation or in the subsequent recovery of the patient.

Dr. D. N. Eisendrath said as to the question raised by Dr. Smith regarding reflex pain in the opposite kidney, and of patients walking about with a pyelitis from stone in the kidney, without having any symptoms or being conscious of it, he had had considerable experience in this direction. A patient whom he had under observation at the present time had had a pyelitis to his knowledge for the past five years; but whether there was a stone present in the kidney now or not, he was unable to say. Pictures were taken originally as the patient had symptoms of pain in the left kidney seven years ago. Skiagraphs were taken at that time, and they failed to show any stone. This failure was ascribed to the fact that they were probably uric acid stones, and did not give a sufficiently deep shadow. Shortly after this the patient passed from the right or opposite kidney a calculus about the size almost of an almond, and in spite of this he continued to have pus in the urine. He examined his urine with a segregator and found that pus came apparently from the side opposite to that of which the patient complained of pain. X-ray pictures were taken again, and failed to show stone. The patient had had no pain since that time, but had passed large quantities of pus ever since. He tried to induce the patient to have an exploratory incision made, but consent could not be had.

Dr. L. A. Greensfelder mentioned a case in which the X-ray plates showed the positive shadow of a stone. The patient not only had a stone, as shown by the skiagraphs, but all the clinical manifestations of stone in the kidney. Finally, she was operated upon, the kidney incised, and explored with the finger to the pelvis, but no stone found, although both poles of the kidney were carefully needledd. In passing a catheter through the kidney from the ureter toward the bladder, the catheter would stick at a certain point and could not be passed any farther until finally, after trying it eight or ten times, using different sized catheters, it pushed by. The kidney was sutured, the lumbar wound closed without drainage, and the patient's symptoms subsided, although a small quantity of pus and a little blood were still seen in the urine.

Dr. Smith stated that all of the cases, the negatives of which he had exhibited, showing stones in the kidney, had been operated upon and stones found in the kidney at the operation.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, held February 1, 1905.

The President, Arthur V. Meigs, M.D., in the Chair.

Recent Advances in the Technic of Roentgen Therapy.—Dr. Charles Lester Leonard read a paper by this title. In considering the apparently antagonistic results published in reference to Roentgen therapy he said it must be remembered that positive evidence is more valuable than negative. Cures, he said, could not be claimed as yet, but an inhibitory action has been absolutely demonstrated. The apparent variation in results he explained by variations in technic and experience of the operator. Effective dosage he considers difficult, because it must be strong enough to injure pathologic cells and yet not too strong for normal tissues. In addition, varying qualities of Roentgen ray produce different effects, and the quality must be adapted to the individual lesion. The physiologic action is stimulant and alterative. In large doses it stimulates the autolytic ferment within pathologic cells, which results in their dissolution and absorption. The difficulty in administration, Dr. Leonard pointed out, lies not only

in adapting the proper quality of ray and dose to the individual lesion to be treated, but also in the fact that the clinician must know how to produce the dose with a complicated mechanism, and must be able to recognize when the right quality and quantity are being employed by their clinical effects. While any dose and any technic will produce some effects, exact dosage is essential to the efficient employment in difficult cases, and as with all other powerful remedies clinical experience in adapting the dose to the individual patient counts in the final result. Increased knowledge and improved technic have recently made marked advances in treatment possible and promise greater efficiency.

Treatment of Non-Malignant Diseases by Roentgen Ray.—Dr. Russell H. Boggs, of Pittsburg (by invitation), presented this paper. He called attention to the necessity of distinguishing between the non-malignant diseases which should, and those which should not, be treated by the X-ray. While the continual cry of technic may become tiresome to some who think the subject can be mastered in a few days or a couple of months, he said that the method of application of the rays and the judgment of the operator accounts largely for successful or unsuccessful work. He believes it to be just as essential to administer a therapeutic dose when applying Roentgen rays as it is when prescribing powerful drugs. It should be remembered that it is not so much the X-ray that cures as the judgment with which it is employed. He considers the X-ray one of the best therapeutic agents known for the treatment of acne and many other skin diseases, but he thinks it is not necessary in many instances to treat the trivial and less obstinate cases by this method, since cures may be effected with other treatment causing less inconvenience to the patient. For the treatment of lupus he regards the X-ray, supplemented by Finsen light, the most efficient therapeutic agent. He also considers the X-ray the most efficient treatment for tubercular glands, Hodgkin's disease and selected cases of goitre.

X-ray Treatment of Malignant Growths.—Dr. Ennion G. Williams, of Richmond, Va. (by invitation), read the above paper. He said that the results of the practical use of the ray as reported by the different operators have differed greatly; that the general profession had been misled by the overenthusiastic as well as by the pessimistic operators, so that the true value of the ray has not yet been found out. To determine the therapeutic value of the ray, Dr. Williams said it was necessary to consider first the factors concerned in the production and variation of the X-ray and the methods of the application in treatment; secondly, the histological changes due to the X-ray, and, thirdly, the nature and location of the growth to be treated. The tissues most influenced by the ray, he observed, are those having a large proportion of cells whose vital processes are very active, such tissues as are found chiefly in malignant tumors, carcinoma and sarcomas. Benign tumors, composed largely of intercellular substance with a small proportion of cells not actively proliferating, are, therefore, only slightly or not at all influenced by the ray. From his observations he concludes that the prognosis depends upon the character of the growths and upon their accessibility to the proper quantity of radiant energy. He believes that the ray is indicated in superficial growths. For deep growths, until there can be shown more uniformly good results, radical surgical procedures should be recommended, to be followed by sufficient X-ray exposure to destroy malignant cells several inches from the surface. Inoperable cases should be treated, because of

remarkable results, and relief of pain which have been noted.

Dr. George C. Johnston, in opening the discussion of the papers said he believed the time had come to make inquiry concerning the claims of the X-ray as a remedial agent. Many of the claims put forth he attributed to overenthusiasm and inexperience. On the other hand, he said, there is a mass of evidence put forth by some of the best men of the profession, men of age, experience and mature judgment whose opinions are worthy of acceptance. The success or failure in the application of the agent, as in any other agent, depends upon the dose, and the dose of the X-ray, he said, was composed of several factors: (1) The length of time the agent is allowed to act; (2) the distance from the source of the ray to the patient; and (3) the degree of vacuum of the tube emitting the Roentgen ray. The third factor, he remarked, is incapable of any accurate measurement short of actual observation of the radiation itself. Another factor in dosage is penetration, and this must be adapted to the depth it is desired to reach. Since some tubes produce a burn easily Dr. Johnston advises beginners to test every tube in radiographic work before using them on a patient. This trial test might cost the operator fifty cents; if tested on the patient, possibly \$50,000, if the operator had it. In radiographic work the X-ray man must have a certain technic, with every detail of which he must be familiar. In radiotherapeutic work he must have a technic more exact and capable of immediate variation to suit individual cases. Dr. Johnston's position is that the legitimate X-ray man does not consider himself the successor of the obsolete surgeon, but that he is proud to be accorded the position of qualified assistant to the surgeon, believing that he has at his command an agent which will afford the surgeon better results in his malignant cases. A postoperative radiation he believes is frequently effective in removing a possible foci of disease, and he has demonstrated to his own satisfaction its power of inhibiting the growth of malignant tissue. The treatment of postoperative radiation should not be left to an assistant or nurse, but be under the charge of a thoroughly qualified X-ray operator. The future of malignancy, Dr. Johnston believes, depends upon the general practitioner, because he sees the cases first. Personally, Dr. Johnston finds that each month he has more of the early cases of cancer, as cancer of the breast, sent to him for treatment. His recommendation in such cases is a Halsted operation and radiotherapy to prevent recurrence. He has cases apparently cured by this method, which remain so. He prefers to call them cases of inhibition, more or less permanent, with the hope that they will remain permanent. The need of X-ray workers, he said, is the cooperation of the surgeons and pathologists. As soon as all work together in harmony he believes that malignancy and other diseases will present a brighter future.

Dr. John B. Shober, in the discussion, said that in his experience with X-ray work he had seen mostly the cases of malignant disease in women, and in six or seven cases of inoperable carcinoma of the cervix he had noted the inhibitory action of the agent. In one case of carcinoma following hysterectomy for carcinoma of the uterus, treated by the X-ray and radium the growth, which was the size of an English walnut, disappeared in the course of ten weeks and there was no sign of recurrence. In a case of carcinoma of the breast in which the patient had positively refused operation, Dr. Shober undertook treatment by the X-ray, with the understanding that the patient would consent to operation if the growth developed under treatment. The

growth increased in size but softened, then diminished in size, and there ultimately remained no sign, except a small induration, possibly the result of an accumulation of fibrous tissue, in the site of the disease.

Dr. George Eretz Shoemaker considered that after the surgeon's work was finished, he owes the duty to his patient of having X-ray applied for a definite time. From his own experience with cancer of the uterus he would advise, first the cautery, after that surgical excision of the part, including the cautery scar, and after that the X-ray. This treatment, he thought, offered the most hope in a field which has been discouraging.

Dr. W. S. Newcomer referred to the value of the X-ray as evidenced in desperate cases which react and get well. He showed on the screen the picture of a case of trachoma in a girl of about sixteen years which had existed since the age of three months. She had been able to count fingers only in the light. As the result of the X-ray treatment she can now see a distance of two or three squares.

Dr. Leonard, in closing, said that the papers of the evening showed the results achieved. Since the development of the technic he feels that much more may be expected from the treatment, and he believes that the future is brighter than the past in regard to the value of the X-ray. An agent which shows itself capable of inhibiting a growth, should be carefully studied, not only by the X-ray men, but by the general profession.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Regular Meeting, held February 17, 1905.

The Infecting Agent in Gonorrhea.—Dr. Young, in opening a symposium on gonorrhea, spoke first of the history of the subject referring to the early mention of the disease and of its confusion with syphilis from the fifteenth century until the experimental work of Hunter and Ricord, the pioneer non-identists. Neisser's discovery in 1879 and successful cultures of the organisms by Bumm in 1887 closed the question of the origin of the disease. Columnar epithelium only was at first thought susceptible to gonorrhreal invasion, but gradually the organism was isolated from joints, tendons, peritoneum, etc.

When Is Gonorrhea Cured?—This was said to be a question difficult to answer. It could not be settled by the absence of gonococci; but a patient should only be dismissed as marriageable when the urine is free from pus, and prostatic and vesicular secretion contained no leucocytes.

Gynecological Aspect.—Dr. Hunner dealt with this phase of the question. Stenosis of the vulva might, he said, be a serious result of the disease. Stricture of the urethra was commoner than supposed; and irritable bladder with trigonitis might be due to the gonococcus. Topical treatment of this condition was fully satisfactory. For the leucorrhœa due to cervical infection radical incisions in the cervix with a Paquelin cautery were useful. Gonorrhœal pus tubes were treated expectantly oftener now than formerly. Removal sometimes led to infection of the opposite side and often the remaining pelvic tissues were extremely tender after operation. Sudden onset, rapid progression and rapid abatement were characteristic of gonorrhœal peritonitis. These features together with the appearance shortly after marriage or near the menstrual period, presence of painful and frequent micturition, and the presence of vaginal discharge would make the diagnosis.

Medical Features.—The organisms, Dr. Thayer said, probably did not produce a soluble toxin, but a toxin associated with the bacterial bodies. The disease might be spread by contiguity, e.g., ophthalmia and metastasis might take place by blood or lymph stream. The inguinal bubo was a good example of the latter, endocarditis of the former. Pericarditis due to gonorrhœa has occurred; but endocarditis is by far the commonest cardiac complication. The condition is found in a gonorrhœal septicemia, but the actual heart change may be due to a secondary invader for which the gonococcus has prepared the way.

Ophthalmological Features.—The Credé prophylaxis, Dr. Wood said, had reduced the frequency of gonorrhœa of the eye from $7\frac{1}{2}$ to $\frac{1}{2}$ per cent. in the Leipzig hospital, and gonorrhœal conjunctivitis was both preventable and curable. Disinfection of the maternal genitalia and simple irrigation of the infant's eyes was used as a routine in the Jefferson Hospital, Philadelphia; and Dr. Wood described the methods of other clinics, detailing the results and reaching the conclusion that the practice of Standish of Boston (boric irrigation, vaselin on the lids, instillations of protargol or argyrol and *no wiping*) was as good as any for the treatment of the condition. Cold applications relieved pain in early stages, but did nothing else; and silver nitrate, while quite efficient, was also quite irritating. Dr. Carroll reported a case of true metastatic gonorrhœal conjunctivitis, and Dr. Baer referred to several cases of "tender heel" he had had recently due to gonorrhœal invasion of the plantar fascia and periosteum, and in some cases causing an exostosis. From the foot of one patient the organism was isolated.

Regular Meeting, held March 3, 1905.

Symposium on Typhoid Fever.—Dr. Fulton opened the discussion with a paper on the etiology and spread of the disease. The disease was, he said, prevalent throughout this country as was also the "malarial delusion," which led to so many mistaken mortality returns. Even in communities where malaria did not exist typhoid fever was often so diagnosed. In St. Louis, where an effort was made to have this mistake reduced to a minimum, there was a large increase in the number of typhoid cases due to their being taken from the malarial statistics on careful diagnosis. The morbidity statistics were said to be not improving much, and in the rural districts, where laboratory conveniences were not always available, a good many wrong reports were made. In Maryland many sudoral and many afebrile typhoid are reported. The incidence of typhoid bears a direct ratio to the number of people living at any given age period—and this holds even for advanced years. The mortality from the disease throughout the United States is in the rural districts about $2\frac{1}{2}$ times that of the cities. In the country milk is one of the most important sources of infection; while the water supply is most important for cities. There are few satisfactory filtration plants; and even the best may be impaired by freezing and allow an outbreak—as occurred in Altoona in 1893.

The Prevention of Typhoid.—Dr. Cole began his paper by reading quotations from an article by Budd, in the *Lancet*, for 1856. This writer recognized the fact that typhoid fever was contagious, gave a good account of an epidemic in Devon, held that all the emanations were infectious, but especially the intestinal, and said that it lay entirely within our power

to prevent epidemics by caring for the stools. But in spite of true views held so long ago the disease is still quite prevalent; and the reason is that the mortality of the disease is so low. The facts of contagion are similar to those of cholera; but this disease has been stamped out because of its horrible nature. We have, however, become used to typhoid; it does not frighten us; and we expect a few cases. Vaccination, and the care of the water supply have been the chief directions which prophylaxis has taken; but the most important thing is to kill the organisms when they leave the patient, who is as much a menace to the community as a scarlet fever case. The possibility of contact infection must not be overlooked. In certain German communities the disease has been stamped out by the work of Koch along these lines. Milk of lime is not very efficacious for sterilization of the stools; the organisms will grow in it, and besides it is soon changed, in the air, to innocuous calcium carbonate.

The Diagnosis.—Dr. Donovan spoke of the early features of the disease—before the laboratory findings are of much use. A fever, particularly occurring in a young person (especially in August and September) should always be suspected. The chief early symptoms were headache, loss of appetite, lack of coincidence of pulse and temperature, languor, pallor and tremulousness. Epistaxis, bronchitis, and absence of leucocytosis were usually seen; but splenic enlargement was not common in the Baltimore cases. Abdominal tenderness, mild tympanites and rose spots would complete the diagnosis.

The Treatment.—Dr. Atkinson said that as the proportion of recoveries increases confidence in specific remedies decreases. A great majority of cases recover if let alone; some will die under *any* treatment. Between these two classes lies the physician's field, and the treatment being adjuvant rather than antagonistic, the first rule is: Do no harm. A trained nurse is always necessary. It is best to underfeed the patient, rather than overfeed him, and we should not depend too much on one form of diet. The general refrigerant treatment should be used; sponging, if intelligently done, is quite as satisfactory as tubbing. For the diarrhea paregoric and bismuth or lead and opium may be given. For the tympanites it is best to change or even withhold the diet, and the latter alternative is to be chosen when vomiting is present. A daily enema usually controls the constipation, but salt or castor oil may be used. The baths control delirium and nervous symptoms; for insomnia and for coma vigil morphia may be given. Stimulants may be used in the disease but probably they are not strongly indicated. For a failing heart strychnine and not digitalis should be exhibited. Saline infusions are useful if renal insufficiency be present; and are also indicated in profuse hemorrhage, together with applications of ice to the abdomen and hypodermics of ergot.

BOOK REVIEWS.

TOXICOLOGY. A Manual for Students and Practitioners. By EDWIN WELLES DWIGHT, M.D. Lea Brothers & Company, New York and Philadelphia.

THE author has here given in small space a résumé of the important facts concerning the poisonous action of many commonly used compounds.

It makes a convenient summary for those who would

not go extensively into the subject, and as such manual have a distinct sphere of usefulness it can be commended to supply just those purposes for which it was devised.

A MANUAL OF PERSONAL HYGIENE. Proper Living upon a Physiologic Basis. By American Authors. Edited by WALTER L. PYLE, A.M., M.D., Assistant Surgeon to the Wills Eye Hospital, Philadelphia. Second Edition, Revised and Enlarged. 12mo volume of 421 pages, fully illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

THE first edition of Dr. Pyle's "Manual of Personal Hygiene" has been deservedly popular. Each of the contributors, besides lending his name, took the department assigned to him seriously and the result was an effective book. The second edition is likely to be even more popular and, with its added chapters on Domestic Hygiene, on Home Gymnastics, besides an appendix on hydrotherapy, mechanotherapy, thermotherapy and first aid to the injured and in medical emergencies, will prove thoroughly helpful. There is no book that we know that can be recommended so confidently to patients and none which so well realizes the distinction between a medical book for physicians and for those without medical training.

REPORT OF THE COMMISSION FOR THE STUDY AND TREATMENT OF ANEMIA IN PORTO RICO. Authorized by act of the Legislative Assembly approved February 16, 1904. Respectfully submitted to Hon. Beekman Winthrop, Governor of Porto Rico, December 1, 1904. Bureau of Printing and Supplies, San Juan, P. R.

This government report contains the English and Spanish résumé of the labors of the Commission. It is notable mainly as containing the data on which are founded the conclusions that the anemia of Porto Rico supposed to be due to some specific disease, incident to the climate and soil of the Island, is really nothing more than an anemic condition consequent upon the presence of certain intestinal parasites. As a consequence of this discovery, there seems no doubt now that the disease will be made to disappear promptly under administrative control.

OUTLINES OF PHYSIOLOGICAL CHEMISTRY. By S. P. BEKEK, Ph.D., and B. H. BUXTON, M.D. The Macmillan Company, New York.

In 195 pages, small size, the authors have been able to compress the main facts of physiological chemistry, and in so doing have performed a really meritorious task.

It is comparatively an easy matter to write a big book, particularly in physiological chemistry, but to turn out a little one that is at the same time explicit and useful is a matter that deserves congratulation and praise. The work will undoubtedly be found to be admirably adapted to class work.

BOOKS RECEIVED.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Volume 29. 8vo, 495 pages. Illustrated. W. J. Dornan, Philadelphia.

IN THE YEAR 1800. By Dr. S. W. Kelley. Doctor's Recreation Series. Volume III. 8vo, 421 pages. Illustrated. Saalfield Publishing Co., Akron, Chicago, New York.

ATLAS AND EPITOME OF OPERATIVE OPHTHALMOLOGY. By Dr. O. Haab. Translated by G. E. de Schweinitz. 8vo, 368 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.